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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

REPORT OF THE DIRECTOR

(J. H. GRISDALE, B. Agr.)

AND

SUMMARY REPORTS

FROM THE

DIVISIONS AT THE CENTRAL FARM AND THE BRANCH EXPERIMENTAL FARMS AND STATIONS

For the Year ending March 31, 1915

Driveway, Brandon Experimental Farm.

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ANNUAL REPORT OF THE EXPERIMENTAL FARMS

FOR THE YEAR ENDING MARCH 31, 1915.

REPORT OF THE DIRECTOR

J. H. GRISDALE, B.Agr.

FIELD CROP AND LIVE STOCK NOTES FOR 1914.

The area under field crops in the Dominion in 1914 is estimated to have been 35,102,175 acres, as compared with 35,375,430 acres in 1913, a decrease of 273,255 acres. Drought is estimated to have caused a crop failure in 1914 over 1,665,500 acres, so that the total decrease in productive area, in 1914, was some 1,938,755 acres.

On the other hand, the total value of the field crops produced in the two years 1913 and 1914, is estimated at $552,771,500 for the former and $638,580,300 for the latter, an increase of $85,808,800. This increase is chiefly to be attributed to higher prices since the outbreak of the war. A comparison of the figures in the following tables will show this marked rise in price quite clearly.

While the quality of the grain in 1914 was not equal to that of 1913, it may be classed as fair.

A comparison of the numbers of farm live stock for the years 1910-14, inclusive, as given in table III, will show that there has been no marked increase in any class in 1914, and in some cases a decrease is recorded.

TABLE I.—Comparison of Yields and Prices Obtained for the Years 1913 and 1914.

Crop.	Average Yield per acre.		Average Price per bush.		Total Production.	
	1913	1914	1913	1914	1913	1914
	bush.	bush.	$	$	bush.	bush.
Fall wheat	23·29	21·41	·80	1·05	22,592,000	20,837,000
Spring wheat	20·81	15·07	·66	1·24	209,125,000	140,443,000
All wheat	21·04	15·67	·67	1·22	231,717,000	161,280,000
Oats	38·78	31·12	·32	·48	404,669,000	313,078,000
Barley	29·96	24·21	·42	·60	48,319,000	36,201,000
Rye	19·28	18·12	·66	·83	2,300,000	2,016,800
Peas	18·05	17·64	1·11	1·46	3,951,800	3,362,500
Beans	17·19	18·20	1·88	2·31	800,900	797,500
Buckwheat	21·99	24·34	·64	·72	8,372,000	8,626,000
Mixed grain	33·33	35·36	·55	·66	15,792,000	16,382,500
Flax	11·30	6·62	·97	1·03	17,539,000	7,175,200
Corn for husking	60·30	54·39	·64	·71	16,772,600	13,924,000
Potatoes	165·88	180·02	·49	·49	78,544,000	85,672,000
Turnips, etc	358·30	394·30	·28	·27	66,788·000	69,003,000
	tons.	tons.	per ton.	per ton.	tons.	tons.
Hay and clover	1·33	1·28	11·48	14·23	10,859,000	10,259,000
Fodder corn	8·62	10·25	4·78	4·91	2,616,300	3,251,800
Sugar beets	8·71	8·98	6·12	5·99	148,000	108,600
Alfalfa	2·54	2·42	11·85	14·17	237,770	218,830

TABLE II.—Comparison of Eastern Canada, Prairie Provinces, and British Columbia as to Yields and Prices Obtained.

CROP.	EASTERN PROVINCES.				PRAIRIE PROVINCES.				BRITISH COLUMBIA.			
	Aver. Yield per acre.		Aver. Price obtained.		Aver. Yield per acre.		Aver. Price obtained.		Aver. Yield per acre.		Aver. Price obtained.	
	1913	1914	1913	1914	1913	1914	1913	1914	1913	1914	1913	1914
	bush.	bush	$	$	bush.	bush.	$	$	bush.	bush.	$	$
Fall wheat	23·91	21·51	·85	1·08	21·00	21·11	·62	·94	33·14	31·82	1·01	1·22
Spring wheat	19·39	19·70	1·10	1·16	19·35	14·94	·64	1·25	26·67	27·77	·99	1·23
Oats	35·00	43·57	·52	·52	43·07	28·16	·25	·44	55·50	55·93	·58	·62
Barley	29·32	29·7	·67	·69	30·30	20·87	·32	·52	35·25	37·29	·68	·92
Peas	18·00	16·21	1·16	1·46	17·22	17·23	·84	1·47	26·67	30·00	1·50	1·45
Rye	18·16	17·21	·72	·87	23·62	2·12	·48	·76	......	......	......	
Flax	22·18	15·37	1·42	1·72	11·24	6·57	·98	1·02	......	......	......	
Potatoes	162·00	191·00	·49	·42	170·00	13·01	·40	·82	207·30	182·00	·66	·78
Turnips, etc	287·48	377·29	·24	·28	252·22	25·39	·48	·65	584·35	431·00	·60	·53
	tons.	tons.			tons.	tons.			tons.	tons.		
Hay and clover	1·30	1·25	11·51	14·57	1·59	1·53	8·44	8·28	2·11	2·23	17·00	15·54
Sugar beets	9·23	9·00	5·20	6·00	5·00	6·00	5·00	5·00	......	......	......	
Fodder corn	8·65	10·53	4·66	4·84	3·69	2·32	8·47	7·16	7·66	8·00	12·00	6·00
Alfalfa	2·31	2·25	11·90	14·97	2·51	2·59	9·54	12·15	4·60	3·33	14·66	13·60

TABLE III.—Farm Live Stock, 1910-14.

——	1910	1911	1912	1913	1914
Eastern Provinces—					
Horses	1,341,065	1,343,576	1,335,628	1,436,207	1,441,381
Milch cows	2,425,280	2,076,656	2,079,188	2,188,824	2,097,586
Other cattle	2,577,867	2,509,622	2,410,671	2,479,406	1,904,976
Sheep	2,253,777	1,850,906	1,750,994	1,747,108	1,630,714
Swine	2,342,304	2,864,603	2,638,410	2,491,564	2,357,128
Western Provinces—					
Horses	872,134	1,194,927	1,296,994	1,369,283	1,445,652
Milch cows	417,671	484,170	491,289	516,011	539,998
Other cattle	1,673,096	1,324,405	1,315,681	1,336,098	1,359,464
Sheep	344,693	285,130	290,685	336,423	382,331
Swine	411,660	712,221	806,415	922,221	1,038,102
British Columbia—					
Horses	....	57,415	59,735	60,518	60,705
Milch cows	....	33,953	34,011	35,599	35,702
Other cattle	....	105,230	101,021	100,183	99,091
Sheep	....	39,272	40,702	45,000	45,000
Swine	....	33,604	32,485	34,541	39,031

NOTE.—Figures for 1910 from British Columbia not available.

METEOROLOGICAL RECORDS AT OTTAWA.

TABLE OF METEOROLOGICAL OBSERVATIONS taken at the Central Experimental Farm, Ottawa, from April 1, 1914, to March 31, 1915, giving maximum and mean temperature for each month, with date of occurrence; also the rainfall, snowfall, and total precipitation.

Months.	Maximum.	Minimum.	Range.	Mean.	Highest.	Date.	Lowest.	Date.	Rainfall.	Snowfall.	Total Precipitation.	Number of days Precipitation.	Heaviest in 24 hours.	Date.
	°	°	°	°	°		°		In.	In.	In.		In.	
April..........	48·01	29·48	18·52	38·74	70·0	19th....	13·0	13th....	2·04	4·00	2·47	19	0·77	26th.
May..........	73·65	45·35	28·30	59·50	92·8	27th....	31·0	1st......	0·30	......	0·30	7	0·16	30th.
June...........	75·23	51·04	24·18	63·13	91·0	24th....	38·0	20th....	2·21	......	2·21	9	0·65	24th.
July...........	80·70	56·81	23·89	68·75	92·0	17th....	44·2	22nd....	1·41	......	1·41	12	0·54	23rd.
August.........	77·50	53·61	23·89	65·55	90·0	10th....	41·0	26th....	2·38	......	2·38	11	0·60	2nd.
September...	69·81	46·42	23·38	58·11	92·0	22nd....	30·0	29th....	2·09	......	2·09	11	0·61	2nd.
October.......	58·30	40·06	18·23	49·17	77·0	4th....	22·0	27th....	1·85	s	1·85	12	0·46	10th.
November....	37·52	23·07	14·45	30·29	64·6	1st.....	— 2·2	18th....	1·70	17·75	3·50	13	1·18	16th.
December.....	24·76	9·00	15·76	16·88	45·6	3rd....	—25·0	26th....	0·66	18·00	2·46	12	0·80	14th.
January.......	22·76	6·80	15·96	14·78	40·0	7th....	—25·4	30th....	0·97	21·50	3·12	14	0·70	25th.
February......	26·95	11·78	15·17	19·36	40·0	15th....	—10·5	4th....	0·69	15·25	2·21	13	0·40	3rd.
March.........	34·40	17·79	16·60	25·99	45·6	24th....	3·0	3rd....	0·47	2·00	0·67	9	0·23	21st.
	.....	.....	.....	.....	....	....	......	....	16·77	78·50	24·67	142	....	

Rain or snow fell on 142 days during the twelve months.

Heaviest rainfall in 24 hours, 1·18 inches on November 16.

Heaviest snowfall in 24 hours, 8·00 inches on December 14.

Highest temperature during the twelve months was 92·8° on May 27.

The lowest temperature during the twelve months was —25·4° on January 30.

During the growing season rain fell on nineteen days in April, seven days in May, nine days in June, twelve days in July, eleven days in August, and eleven days in September.

May shows the lowest numbers of days with precipitation, viz., seven.

Total precipitation during the twelve months, 24·67 inches, as compared with 28·51 inches during 1913-14.

RAINFALL, SNOWFALL, AND TOTAL PRECIPITATION from 1890 to 1914; also, the average annual amount that has fallen.

Years.	Rainfall.	Snowfall.	Total Precipitation.
	Inches.	Inches.	Inches.
1890	24·73	64·85	31·22
1891	30·19	73·50	37·54
1892	23·78	105·00	34·28
1893	31·79	72·50	39·04
1894	23·05	71·50	30·20
1895	27·01	87·50	35·76
1896	21·53	99·75	31·50
1897	24·18	89·00	33·08
1898	24·75	112·25	35·97
1899	33·86	77·25	41·63
1900	29·48	108·00	40·72
1901	29·21	97·25	38·91
1902	25·94	101·75	36·10
1903	26·43	85·00	34·92
1904	25·95	108·75	36·79
1905	23·71	87·25	32·42
1906, January 1 to March 31	1·90	24·50	4·34
1906–07	21·73	72·50	28·94
1907–08	24·70	134·75	38·18
1908–09	22·13	107·90	32·91
1909–10	28·40	61·25	34·51
1910–11	18·94	88·25	27·72
1911–12	20·12	98·50	29·95
1912–13	32·54	106·50	43·18
1913–14	21·51	70·25	28·51
1914–15	16·77	78·50	24·67
Total for 25 years and 3 months	634·33	2,284·00	862·99
Average for 25 years	25·37	91·36	34·51

RECORD OF SUNSHINE at the Central Experimental Farm, Ottawa, from April 1, 1914, to March 31, 1915.

Months.	Number of days with Sunshine.	Number of days without Sunshine.	Total hours Sunshine.	Average Sunshine per day.
April	24	6	181·0	6·03
May	31	0	275·1	8·87
June	26	4	270·2	9·00
July	30	1	295·7	9·53
August	29	2	233·7	7·53
September	28	2	224·8	7·49
October	22	9	143·5	4·62
November	19	11	76·6	2·55
December	18	13	91·5	2·95
January	23	8	87·1	2·80
February	19	9	100·3	3·54
March	30	1	211·5	6·82

WILLIAM T. ELLIS,

Observer.

PUBLICITY.

Since the inauguration of the Dominion Experimental Farms in 1886, with a Central Farm as headquarters at Ottawa and four branch Farms—one in each of the provinces of Nova Scotia, Manitoba, Northwest Territories, and British Columbia—the Farms system has expanded until to-day there are twenty-nine Experimental Farms, Stations, and Substations established throughout the Dominion, where systematic experimental and research work is being conducted by specially trained investigators seeking to solve the innumerable problems which underlie successful farm operations. These Farms and Stations are equipped and maintained for the special benefit of the farmers of Canada, and our aim is to place before these farmers in a practical and understandable manner the results of our experiments and investigations.

In no small measure we have assisted in the extraordinary development which has taken place in Canadian agriculture during the past quarter of a century; but, helpful as we have been, we realize that the objects for which the Dominion Experimental Farms were incepted will not have been fully attained until every one of the 765,000 farmers of this country has a knowledge of our institutions, of the work we are doing, and is directly or indirectly benefiting by our experience.

By short courses, lectures, correspondence, reports and bulletins, and through the agricultural press we are imparting a vast amount of valuable information; but, from lack of the necessary facilities and machinery, that information is not as widely disseminated as we should wish; nor are we able to get in touch with a very large number of the men who more particularly need our assistance. There are many thousands of farmers throughout the Dominion, especially in the more recently settled sections, who are not receiving directly or regularly our publications; who do not know of the existence of the Farms System, and that these bureaus of agricultural information are available to them for advice and suggestions when confronted with problems which they themselves are unable to solve.

For these reasons, the question of greater publicity concerning the Experimental Farms has been receiving our earnest consideration for some time past, with the result that early in the spring of 1914 provision was made for taking definite action in the matter. Of the several schemes contemplated it appeared to us that, with the facilities available, an organized plan of attending the principal exhibitions and fairs throughout the Dominion would, for the first year at all events, be the most economical and fruitful of results, since we could by a representative and practical exhibit: (1) impart considerable information to the many thousands of visitors to the fairs; (2) we could make known the fact that there was an extensive system of Dominion Experimental Farms with stations in every province of the Dominion; and (3) attention could be directed to our mailing list and to the large number of publications available for distribution on application.

EXHIBITIONS ATTENDED.

Under my supervision, Mr. J. F. Watson, of the Experimental Farms staff, was given charge of the work of bringing together representative exhibits from the various Divisions of the Central Farm, and the carrying out of the programme of attending the principal exhibitions and fairs to be held during 1914 throughout the Dominion.

The plan of organization adopted provided for assembling at the Central Farm the staging and exhibits for five circuits of fairs, each circuit being arranged so as to permit of attending as many fairs as possible. In accordance with this plan a "Dominion Experimental Farms' Exhibit," including an exhibit from the branch Farm nearest to the place of exhibition, and an exhibit from each of the Divisions of the Central Farm, representing Animal Husbandry, Field Husbandry, Cereals, Chemistry, Horticulture, Botany, Poultry, Bees, Forage Crops, and Tobacco, was shown at the following exhibitions: Shubenacadie, N.S.; Sydney, N.S.; St. John, N.B.;

Charlottetown, P.E.I.; Quebec, Que.; Three Rivers, Que.; Sherbrooke, Que.; London, Ont.; Ottawa, Ont.; Winnipeg, Man.; Brandon, Man; Regina, Sask.; Prince Albert, Sask.; Saskatoon, Sask.; Calgary, Alta.; Lethbridge, Alta.; Medicine Hat, Alta.; Vancouver, B.C.

With the co-operation of the superintendents of the branch Farms and Stations who, with their assistants, attended the exhibitions in their respective localities, we were able in an attractive and practical manner to place before some hundreds of thousands of visitors to the fairs some of the results of our work; while our superintendents and their assistants furnished information regarding the exhibits tabled, and by discussions and answering questions gave much useful advice concerning all lines of farm activity. As a direct result over four thousand applications were received from persons desirous of having their names placed on our mailing list.

At the close of the exhibition season we received many very satisfactory and complimentary reports from exhibition managers and visitors to the fairs and from our own superintendents and from special inquiries which we made regarding the usefulness of our exhibits. Those reports clearly indicated that, as was expected, attendance at exhibitions is one of the very best means towards the end of greater publicity concerning our institutions and of translating the results we are obtaining in the field and in the laboratory. We hope to continue this line of educational work on a more extended scale next year, and to endeavour especially to make the Dominion Experimental Farms exhibit one of the main features at a large number of the smaller fairs throughout the Dominion, as by including the smaller fairs many thousands of the farming community who do not visit the larger and principal exhibitions would be given an opportunity of making use of the institutions equipped and operated for their express benefit.

ILLUSTRATION STATIONS.

In October, 1914, accompanied by Mr. Angus Mackay, of Indian Head, Sask., for part of the time, and later by Mr. W. H. Fairfield, Lethbridge, Alta., I visited many points in that tract of country extending from Herbert, Sask., on the east to Pincher Creek, Alta., on the west, and from the international boundary on the south to Empress, Alta., on the north. This examination by rail, automobile, and horse was made with a view to the establishment of Illustration Stations at various points in the area mentioned, which, it will be observed, includes those districts more seriously affected by drought that year.

It was decided, after this trip, to carry on illustration work at the following points: Herbert, Cabri, Prelate, Gull Lake, Pambrun, Shaunavon, and Assiniboia in Saskatchewan, and Whitla, Medicine Hat, Carmangay, McLeod, Manyberries, Bow Island, Empress, Carlstadt, and Irvine in Alberta. Farms were selected at practically all these places, and subsequently a scheme of illustration work was prepared and submitted to the owners or operators of the land selected, with proposals as to the conditions under which the Experimental Farms branch was ready to carry on illustration work on their farms, or at least on certain definitely described parts thereof.

The object or purpose of this Illustration Station work probably cannot be better explained than by quoting from a memorandum prepared by myself three years or more ago and then only after the matter had been under consideration for several years. The memorandum referred to bears date January, 1912, and in part reads as follows:—

> "For twenty-five years the Dominion Experimental Farms have been investigating problems in soil cultivation and crop production, and making varietal tests of forage crops and cereals. In that time a great deal of information of value to the farming community in connection with rotations, methods of crop cultivation, the relative values of crops to the average farmer, and the importance of performing different cultural operations at the right time has

been gained. The dissemination of this information amongst our farmers has always been a difficult problem. Many thousands of reports and bulletins are sent out every year, and farmers have been invited to correspond with us and attend agricultural meetings. Still, much remains to be done—in fact, comparatively little has been done so far as reaching the average farmer is concerned, since the average farmer, to a certain extent, and the poor farmer very positively, does not take any interest in publications, and seldom attends agricultural meetings, and so remains in ignorance of the progress that is being made in agricultural science and investigation.

"These conditions have been attracting my attention for some years, and I have been devoting attention to the matter of evolving a plan whereby our poor farmers as well as our good farmers would have an opportunity, and in a certain measure even be compelled to take advantage of or at least to observe the benefits resulting from the introduction of more advanced methods of rotation, cultivation, and crop production generally. With this end in view, I have, during the last year or two, been considering the advisability of proposing and advocating the establishment of a number of Demonstration Farms at certain points in the different provinces of the Dominion, and I now have to propose the following scheme.

"In my opinion, it would be advisable to secure the co-operation of certain farmers at or near the points named below to carry on certain work in crop rotation, soil cultivation, and soil improvement along lines to be laid down by some officer under our direction. At each of these points, I would suggest securing the co-operation of a farmer whose land should be located on some leading or well travelled road within easy walking distance of a central town or village. The farmer chosen should be one of good repute in the neighbourhood, being already recognized as a good farmer, although not necessarily the possessor of a good farm. We would ask this farmer to hand over to us, or at least to handle according to our instructions, from 15 to 30 acres of his land; that is, as many 5-acre fields as there would be years in the rotation we thought it advisable to introduce or follow in the district where the farm was situated."

As indicated above, it is planned by these Illustration Stations to arouse interest in two ways: First by giving ocular demonstrations that (1) the use of good seed, (2) following a suitable rotation, and (3) practising good cultivation, pay; and, second, by working up a feeling of friendly rivalry. By these means it is hoped that many farmers of the locality may be induced to go and do likewise.

The rapid increase in the number of our Experimental Farms and Stations during 1912 and 1913, however, and the many new lines of experiment being got under way on each, presented such an array of administrative and technical problems, and called for such heavy outlay that it was thought unwise to take up the Illustration Station work until our several new Experimental Stations were in fair running order.

It was finally decided to amplify the work suggested in the above memorandum to the extent of including illustration work with a few of the best varieties of grain and some grasses, clovers, alfalfas, corn, and roots, as well as in crop rotation and cultural methods as first intended. It will be observed, too, that the original memorandum spoke of these Illustration Stations as "Demonstration Farms." When it was finally possible to begin the work it was found that certain Provincial Governments had already made a start along somewhat similar lines and were calling the land whereon they were doing their work "Demonstration Farms," hence, to avoid confusion, it was thought advisable to designate the areas under the Dominion Experimental Farms as "Dominion Illustration Stations," and as such are they now known.

An officer well fitted to have supervision of these Stations was selected, viz., Mr. John Fixter, farm foreman on the Central Experimental Farm, Ottawa, for some twenty years, subsequently farm manager at Macdonald College, Que., and latterly chief inspector for the Commission of Conservation. Mr. Fixter's long and practical experience in crop production fits him peculiarly well for this work of supervision, and it is felt that, under his immediate control, these Stations cannot fail to be of very material benefit to the farmers in their near neighbourhood, as well as of very great service to Canadian agriculture in a general way by increasing the common fund of knowledge along the lines mentioned.

Mr. Fixter re-entered our service early in March, and proceeded immediately to the getting of things under way at the points above named and at certain other points enumerated below.

Since in the area above mentioned the great problem has usually been moisture conservation, much attention is being paid to illustration of methods of overcoming this difficulty, and the following diagram indicates the work now under way at the points below mentioned and under the charge of the farmers named therewith.

CROPPING System on Illustration Area.

Fields (5 acres each).	YEAR.		
	1915.	1916.	1917.
A	Wheat continuously		
B	2 yr. rotation		
	Wheat	Fallow	
C	Fallow	Wheat	
D	3 yr. rotation		
	Fallow	Wheat	Oats.
E	Wheat	Oats	Fallow.
F	Oats	Fallow	Wheat.
G	Alfalfa 2 acres in rows 36 inches apart.		
	" 1 " broadcast.		
	Western rye grass.		
	Corn 2½ acres in rows 36 inches apart.		
H	Wheat 2½ acres.		

LIST of Illustration Stations and Names of Operators.

Assiniboia, Sask	Warren, Percy J. H.
Beadle, Sask	How, J.
Bow Island, Alta	Mortensen, Martin.
Cabri, Sask	Abraham, F. W.
Carmangay, Alta	Nielson, Jos. A.
Empress, Alta	Barry, Frank.
Foremost, Alta	Frankish, T. H.
Grassy Lake, Alta	Perry, D. C. and F. N.
Gull Lake, Sask	Thomas, E. H.
Herbert, Sask	Holmes, Milton.
Jenner, Alta	Fisher, Jerry.
Macleod, Alta	Grier, R. and N.
Magrath, Alta	Meldrum, J. A.
Manyberries, Alta	Sikelson, Matti.
Maple Creek, Sask	Hammond, G. L.
Medicine Hat, Alta	Hunt, E. J.
Milk River, Alta	Kinder, Wm.
Pambrun, Sask	Applgren, Chas. W.
Pincher, Alta	Sandgren and Carlson.
Prelate, Sask	Huxtable, Wm.
Shaunavon, Sask	McLean, Neil.
Whitla, Alta	Babe, R. H.

It is intended to extend this work in the provinces where it has already been started, and similar lines of work are being planned for other provinces.

MEETINGS ATTENDED.

The many duties demanding my attention at Ottawa, and the necessarily large amount of time taken up each year in visiting the various branch Farms and Stations, prevent my attending many agricultural conferences or meetings of any kind. I found it possible, however, to take part in meetings or deliver addresses at a number of points during the past year. Among the more important meetings attended and addressed were the following: Waterloo County Farmers' Institute annual meeting at Galt, Ont.; Farmers' meeting (special), St. Jean Port Joli, Que.; Eastern Ontario Dairymen's Association meeting at Peterborough, Ont.; Patriotism and Production meetings at Kingston, Perth, Belleville, and Peterborough in Ontario; Board of Trade meeting, Lethbridge, Alta.; and Field Naturalists' Club of Ottawa at Ottawa, this last address being on the subject "Milk," and illustrated with lantern slides.

JOURNEYS.

As usual, journeys undertaken have been for the most part such as were connected with the inspection of branch Farms and Stations already under way or else for the purpose of looking into conditions with a view to the establishment of new Stations in districts where such work is not yet begun.

In April and May, 1914, I visited the Experimental Farms and Stations in the Maritime Provinces and Quebec, and in May and June inspected those situated west of the Great Lakes, as well as visited the tobacco Stations at Farnham, Que., and Harrow, Ont.

While in the West at this time I again went over the ground upon which it had for some time been a question of the establishment of a Station for the Okanagan valley, in British Columbia, and also visited a number of possible sites for a Station in southern Manitoba.

In October and November I again visited the western Farms and Stations, and on this occasion was authorized to organize an Experimental Station at Summerland on the site just mentioned as having been again inspected in June. This Station, as reported on elsewhere, is now well under way.

On the occasion of this trip to the West I visited a number of points in the southwestern part of Saskatchewan and in the southern part of Alberta. Trips were undertaken along the various railroad lines in these districts in both provinces, stops being made at various points, and runs undertaken by horse or automobile out into the country adjoining the railroads or, in some cases, long automobile runs taken across country where no railroads existed. This trip, taken by direction of the Minister of Agriculture, had for its object not only the familiarizing of myself with agricultural conditions in the area mentioned, but was taken in a large measure with a view to the selection of a number of locations for the carrying on of illustration work in this region where there is a somewhat lighter average annual rainfall than in most parts of the prairie country. The results of this trip are discussed elsewhere under the heading "Illustration Stations."

In December I made a trip to Cochrane, Ont., the present northern terminus of the Toronto and Northern Ontario railway, and the principal town on the Transcontinental railway between Quebec and Winnipeg.

From Cochrane I proceeded west along the Transcontinental railway for about 75 miles, seeking a site for the location of an internment camp for alien enemies who were to be put to work clearing land to be used later for Experimental Farm purposes. A most excellent location was found where the railway crosses the Kapuskasing river, and here camps were opened up and operations begun immediately.

To the eastward of Cochrane I travelled about 150 miles, and finally fixed upon Spirit Lake as being probably the site on the line of the Transcontinental in the province of Quebec best suited for a similar purpose. It should be stated that these trips were taken after the snow was on the ground, hence it was rather difficult to fix upon locations likely to be entirely suitable.

Another point I would like to put upon record here is this: that the selection of sites in both cases was very largely influenced, if not entirely controlled, by the fact that it was imperative to select land covered with standing timber to permit of the interned men being put to work at once. Thus, while the land at Kapuskasing is undoubtedly as good as any to be found along the line of the Transcontinental, the same cannot be said of the land at Spirit Lake, inasmuch as locations complying with the "well wooded" clause of the conditions governing the selection of a site were scarce, and in fact about the only available site near the railway fulfilling this requirement was the one selected.

The land at Spirit Lake is undoubtedly rather lower and probably more difficult to drain than might be considered desirable, but the soil is of good quality, and will, I am sure, prove fertile. In any case, it is eminently characteristic of the soils of the district.

These two sites are now being cleared and stumped, but it is not expected that much crop will be produced at either place in 1915.

In March I again visited some of the Farms on the prairies, and did some further work in connection with the Illustration Stations.

CORRESPONDENCE.

Below are tabulated the totals of the letters sent out from the various Divisions at the Central Farm and from the branch Farms and Stations. The total given for reports and bulletins mailed from the Central Farm represents only a very small proportion of the publications actually sent out. The mailing lists and most of the special applications are supplied from the Publications Branch, Department of Agriculture, Ottawa.

CENTRAL EXPERIMENTAL FARM.

Divisions.	Letters. Received.	Letters. Sent.
Director	20,471	13.784
Field Husbandry	1,428	1.205
Chemistry	3,605	2,872
Horticulture	7,586	7,979
Cereals	13,301	3.337
Botany	2,978	3,052
Animal Husbandry	4,163	5,822
Agrostology	728	1,134
Poultry	5,465	7.083
Tobacco	3,795	5,640
French correspondent	6,780	2.982
Apiary	843	844
Miscellaneous	13,191	4.315
Total	84.334	60,049

REPORTS, BULLETINS AND CIRCULARS.

Reports and bulletins mailed	7,361
Circulars	20,395

BRANCH FARMS AND STATIONS.

Farm or Station.	Letters. Received.	Letters. Sent.
Charlottetown	1,270	1,297
Fredericton	1,270	1,051
Nappan	2,571	2,671
Kentville	2,994	3,048
Ste. Anne de la Pocatière	1,094	1,074
Cap Rouge	3,383	3,580
Lennoxville	880	888
Brandon	3,888	4,006
Indian Head	14,614	14,558
Rosthern	3,181	2,873
Scott	1,988	2,093
Lethbridge	4,918	4,400
Lacombe	5,215	5,809
Agassiz	4,850	4,627
Invermere	659	433
Sidney	1,183	904
Total	53,958	53,312

The totals for the branch Farms and Stations are exclusive of reports, bulletins, and circulars sent out.

By adding the totals for the Central and branch Farms, the total number of letters received at all points is seen to be 138,292, and of those sent out, 113,861.

DISTRIBUTION OF SAMPLES.

This distribution was carried on as usual, all applications for grain samples being filled at the Central Farm. From Ottawa, 7,491 samples were sent out. The details of this distribution will be found in the report from the Division of Cereals. From the branch Farms and Stations, the following numbers of samples of potatoes were mailed:—

Charlottetown	20
Kentville	132
Fredericton	51
Nappan	294
Brandon	297
Indian Head	2,648
Rosthern	826
Scott	175
Lethbridge	1,025
Lacombe	1,347
Agassiz	485

This is a total from all Farms and Stations of 14,891 samples. Other distributions of material, more limited in scope, or of a special character, were also made, such as that of tobacco seed, some 4,000 samples of which were sent out, of inoculated soil for the growth of alfalfa, chiefly sent out from the western Experimental Farms, as well as a distribution of sweet corn, vegetable and flower seeds to applicants from Quebec, carried on from the Cap Rouge Station, and of tree seeds, etc., from the Prairie Farms.

PUBLICATIONS ISSUED.

The following publications have been issued during the year, or are in the press at its close:—

The Annual Report of the Dominion Experimental Farms for the year 1913-14.

In the Regular Series of bulletins:—

No. 78, Ventilation of Farm Buildings, by J. H. Grisdale and E. S. Archibald. Different systems of ventilation and their installation are taken up in this bulletin, and their relative merits weighed. It is based upon the results obtained from many years of experiments at the Central Farm.

No. 79, The Renovation of the Neglected Orchard, by M. B. Davis, Assistant in Horticulture. This is a very practical publication on this subject.

No. 80, Lime in Agriculture, by Frank T. Shutt, Dominion Chemist. The uses and methods of application of lime and its compounds are dealt with in a clear and practical manner.

Nos. 81, 82, 83, and 84 give a summary of the results of the season's work in cereals, horticulture, field husbandry, and forage plants, respectively.

No. 85, on Hardy Roses, their Culture in Canada, by W. T. Macoun, Dominion Horticulturist, and F. E. Buck, Assistant, is a compilation of the results of many years of experimental work in the growing of hardy roses.

In the Second Series, there were issued:—

No. 19, on The Planting and Care of Shade Trees, by F. E. Buck, Assistant in Horticulture.

No. 20, The Farmer as a Manufacturer, by A. T. Stuart, Assistant Chemist.

No. 21, on Tobacco Seed-beds, by F. Charlan, Tobacco Husbandman.

No. 22, on The Growing of Field Root, Vegetable, and Flower Seeds in Canada, by M. O. Malte and W. T. Macoun.

No. 23, on Medicinal Plants and their Cultivation in Canada, by J. Adams, Assistant Botanist.

Of Circulars, there were issued:—

No. 6, on The Regulations under the Destructive Insect and Pest Act Governing the Importation, Sale, Shipment, and Export of Potatoes, by H. T. Güssow, Dominion Botanist.

No. 7, on Potash in Agriculture, by the Dominion Chemist, Dr. Frank T. Shutt.

No. 8, Manures and Fertilizers, by Dr. Frank T. Shutt, Dominion Chemist.

No. 9, on The Control of Potato Diseases, by H. T. Güssow, Dominion Botanist.

In connection with the extension of our exhibition work referred to at greater length previously in this report, some thirty-eight exhibition circulars were brought out for distribution at the various points where exhibits were made. The following exhibition circulars were issued this year:—

No. 1. Natural Incubation.
No. 2. Artificial Incubation.
No. 3. Varieties of Grain recommended by Dominion Cerealist.
No. 4. Varieties of Grain recommended by Dominion Cerealist.
No. 5. Distribution and Sale of Seed Grain.
No. 6. The Farmers' Poultry House.
No. 7. Profitable Field Root Varieties for Ontario and adjacent Parts of Quebec.
No. 8. Profitable Field Root Varieties for the Maritime Provinces and Eastern Quebec.
No. 9. Crop Rotations for Central and Eastern Canada.
No. 10. Awnless Brome Grass *vs.* Western Rye Grass.
No. 11. Grape Growing.
No. 12. The Farm Flock.
No. 13. Brooding and Rearing of Chicks.
No. 14. Sweet Clover.
No. 15. Top Grafting.
No. 16. Hotbeds and Cold Frames.
No. 17. Protection of Fruit Trees from Mice and Rabbits, and care of Injured Trees.
No. 18. Bee-keeping in Canada.
No. 19. Tobacco Culture in Canada.
No. 20. Clean Milk.
No. 21. Profits from Dairy Cows.

No. 22. Coulommier Cheese.
No. 23. Cream Cheese and Butter.
No. 24. Seed Treatment for Smut Prevention.
No. 25. List of Publications.
No. 26. Chemistry of Agriculture, Part I.
No. 27. Chemistry of Agriculture, Part II.
No. 28. Chemistry of Agriculture, Part III.
No. 29. Duck Raising.
No. 30. Turkey Breeding.
No. 31. Goose Breeding.
No. 32. Nature's Bank.
No. 33. Feeding of Live Stock.
No. 34. The Farm Well.
No. 35. Crop Rotations for Dry Farming.
No. 36. Recommended Varieties of Grain for British Columbia.
No. 37. Recommended Varieties of Grain for Quebec and Ontario.
No. 38. Recommended Varieties of Grain for the Maritime Provinces.

In March, the first issue of a pamphlet entitled "Seasonable Hints" was brought out. As its name implies, the chief aim of this publication is to place in the farmer's hands some suggestions on the work on which he is presently engaged, and give him the benefit of the results along similar lines obtained at the Experimental Farms. It is planned to bring out further issues of the "Hints" during the coming year, at such times as its value will be greatest, and its contents most timely.

ADDITIONS TO AND CHANGES IN THE STAFF.

The European war has removed from the service of the Farms, though only temporarily it is hoped, a number of assistants at the branch and Central Farms, and also one superintendent, Mr. R. E. Everest, of the Station at Scott, Sask. In most cases, men have been appointed temporarily to fill the positions made vacant during the regular appointee's absence. In addition, the following appointments have been made on the branch Farms:—

Lionel Stevenson, B.S.A., Superintendent, Experimental Station, Sidney, B.C.
R. H. Helmer, Superintendent, Experimental Station, Summerland, B.C.
J. A. McClary, Superintendent, Experimental Station, Lennoxville, Que.
G. C. Routt, Manager, Tobacco Station, Harrow, Ont.; vice W. A. Barnet B.S.A., resigned.
W. H. Gibson, B.S.A., Superintendent, Experimental Farm, Indian Head, Sask.; vice T. J. Harrison, B.S.A., resigned.
W. H. Hicks, B.S.A., Assistant to the Superintendent, Brandon, Man.
T. F. Ritchie, B.S.A., Assistant to the Superintendent at Lennoxville, Que.
C. M. Williams, B.S.A., Assistant to the Superintendent at Nappan, N.S.

At the Central Farm:—

Geo Muir, B.S.A., Assistant to the Dominion Animal Husbandman.
G. G. Moe, B.S.A., Assistant to the Dominion Cerealist; vice R. L. Newton, B.S.A., resigned.
John Adams, M.A., Assistant Dominion Botanist.
F. L. Drayton, Assistant in Plant Pathology.
L. A. Brown, B.S.A., Assistant Chemist.

BUILDINGS.

Very little building work was done during the year, either on the Central or branch Farms, with the exception of some small items on the branch Farms, done by day labour. These are noted in the reports from those points.

CONFERENCE OF SUPERINTENDENTS.

In January last a conference lasting four days was held at Ottawa between the superintendents of the branch Farms and Stations and the officers of the Central Farm. A programme covering the subjects to be discussed was drawn up and followed. The conference did much to systematize the work at the various Farms and Stations, and to strengthen the esprit de corps of the whole staff of the Experimental Farms System.

NEW STATIONS

MORDEN, MAN.

In January, an area of some 280 acres was purchased near Morden, in southern Manitoba, and preliminary work thereon was commenced this spring, under the supervision of Mr. Charles Boyle, as foreman-manager.

SUMMERLAND, B.C.

On the Penticton Indian reserve, at Summerland, B.C., 550 acres were taken over for Experimental Station purposes. Of this area, 275 acres are irrigable. The remaining 275 will be worked under "dry-farming" conditions

On November 8, Mr. R. H. Helmer was appointed Superintendent of the Summerland Station.

Up to March 31 of this year, 91 acres have been cleared and ploughed. A large amount of fluming and ditching has been done, and other preparations made for irrigation, and an agreement made with the municipality of Summerland for supplying water for the above purpose from the town water system.

EXPERIMENTS AT FORT VERMILION, PEACE RIVER DISTRICT, ALBERTA.

Seeding commenced on April 30 at the Station, and was general in the district during the first week in May. May and June were favourable to rapid growth although the rainfall was light. Haying commenced July 15, and the first grain (Black Mesdag oats) was cut on the 22nd. Strawberries were ripe by that date, and raspberries by the end of the month. Prelude wheat was cut July 4.

The first killing frost occurred on the night of September 7.

Some fencing was done on the Station, taking in an additional area of 3 acres.

The amount of fall work done in the Peace River district was considerably above the average, owing to the favourable weather.

The winter of 1914-15 has been a very mild one, with ample snowfall, which should provide abundant moisture for germination and early growth.

Nine varieties of wheat tested gave yields of from 63 to 44 bushels per acre; five varieties of oats from 120 to 60 bushels per acre. Four varieties of barley (six-row) gave returns of from 57 to 51 bushels per acre, and two varieties of two-row yielded 62 and 61 bushels per acre, respectively. One variety of peas tested, the Arthur, yielded 45 bushels per acre.

Five sorts of potatoes gave returns of from 441 to 210 bushels per acre. Garden vegetables such as peas, onions, carrots, asparagus, rhubarb, celery, beans, beets, parsnips, turnips, cucumbers, marrows, squash, pumpkins, cauliflower, cabbage, and tomatoes were successfully grown and were of fine quality.

Corn for ensilage, six varieties of which were tried, ran from 20 to 16 tons per acre. Field turnips (four varieties) from 20 to 15 tons; mangels (four varieties) from 36 to 20 tons; and field carrots (four varieties) from 36 to 26 tons per acre.

Timothy gave 1 ton 1,500 pounds per acre. Canary seed grass 2 tons 1,500 pounds, Western Rye grass 2½ tons, and Brome grass 2¾ tons per acre.

A good stand of several varieties of alfalfa was obtained, the yields running from 1 ton 1,050 pounds to 1,800 pounds per acre for the first cutting. The second cutting was left on the ground in each case.

METEOROLOGICAL RECORDS.

The following records of temperatures, precipitation and sunshine were tabulated by Mr. W. T. Ellis, weather observer at the Central Farm. The latter has also prepared tables comparing the Fort Vermilion records with those at Ottawa.

Table of Meteorological Observations taken at Fort Vermilion, Peace River District, Alberta, from April 1, 1914, to March 31, 1915, showing maximum, minimum, and mean temperature; the highest and lowest for each month, with date of occurrence; also rainfall, snowfall, and total precipitation.

1914–15.

Months.	Maximum.	Minimum.	Range.	Mean.	Highest.	Date.	Lowest.	Date.	Rainfall.	Snowfall.	Total Precipitation.	Number of days Precipitation.	Heaviest in 24 hours.	Date.
	°	°	°	°	°		°		In.	In.	In.		In.	
April..........	46·22	16·73	29·49	31·47	61·1	20th..	−14·0	2nd...	0·08	......	0·08	1	0·08	28th.
May..........	63·81	32·64	31·17	48·22	82·9	24th..	20·9	4th...	0·16	......	0·16	4	0·06	17th.
June...........	72·11	41·70	30·41	56·90	90·0	15th..	29·0	10th..	0·66	......	0·66	6	0·34	5th.
July...........	74·03	45·62	28·40	59·82	90·2	1st....	35·2	30th..	1·74	......	1·74	10	0·48	21st.
August........	72·42	43·13	29·28	57·77	84·0	4th...	31·2	23rd..	1·80	......	1·80	7	0·90	7th.
September....	58·16	33·00	25·16	45·58	76·0	3rd...	23·1	17th..	0·79	......	0·79	6	0·20	4th.
October.......	47·59	24·56	23·02	36·07	67·9	8th...	15·2	11th..	0·25	......	0·25	3	0·11	30th.
November....	23·51	3·58	19·93	13·54	43·5	20th..	−25·0	17th..	......	8·00	0·80	5	0·30	11th.
December.....	−0·43	-25·84	25·40	-13·14	28·0	17th..	−43·5	28th..	......	0·50	0·05	1	0·05	21st.
January.......	3·24	-21·83	25·08	−9·29	32·5	18th..	−53·0	26th..	......	2·50	0·25	4	0·10	12th.
February......	15·73	-15·33	31·07	0·20	27·5	23rd..	−43·0	18th..	......	3·50	0·35	2	0·30	16th.
March.........	33·21	1·25	31·96	17·23	55·0	22nd..	−22·5	1st....	......	8·00	0·80	6	0·25	3rd.
									5·48	22·50	7·73	55		

SOME WEATHER OBSERVATIONS taken at Central Experimental Farm, Ottawa, as compared with those taken at Fort Vermilion, Peace River District, Alberta.

———	Mean Temperature.	Highest Temperature.	Lowest Temperature.	Total Precipitation.	Heaviest in 24 hours.	Total hours Sunshine.	Average Sunshine per day.
April.	°	°	°	In.	In.		
Ottawa	38·74	70·0	13·0	2·47	0·77	181·0	6·03
Fort Vermilion	31·47	61·1	−14·0	0·08	0·08	255·2	8·50
May.							
Ottawa	59·50	92·8	31·0	0·30	0·16	275·1	8·87
Fort Vermilion	48·22	82·9	20·9	0·16	0·06	392·3	12·65
June.							
Ottawa	63·13	91·0	38·0	2·21	0·65	270·2	9·00
Fort Vermilion	56·90	90·0	29·0	0·66	0·34	287·8	9·59
July.							
Ottawa	68·75	92·0	44·2	1·41	0·54	295·7	9·53
Fort Vermilion	59·82	90·2	35·2	1·74	0·48	335·4	10·81
August.							
Ottawa	65·55	90·0	41·0	2·38	0·60	233·7	7·53
Fort Vermilion	57·77	84·0	31·2	1·80	0·90	297·1	9·58
September.							
Ottawa	58·11	92·0	30·0	2·09	0·61	224·8	7·49
Fort Vermilion	45·58	76·0	23·1	0·79	0·20	163·7	5·45
October.							
Ottawa	49·17	77·0	22·0	1·85	0·46	143·5	4·62
Fort Vermilion	36·07	67·9	15·2	0·25	0·11	128·2	4·13
November.							
Ottawa	30·29	64·6	−2·2	3·50	1·18	76·6	2·55
Fort Vermilion	13·54	43·5	−25·0	0·80	0·30	43·9	1·46
December.							
Ottawa	16·88	45·6	−25·0	2·46	0·80	91·5	2·95
Fort Vermilion	−13·14	28·0	−43·5	0·05	0·05	60·1	1·93
January.							
Ottawa	14·78	40·0	−25·4	3·12	0·70	87·1	2·80
Fort Vermilion	−9·29	32·5	−53·0	0·25	0·10	63·9	2·06

Part of Experimental Farms Exhibit, Central Canada Exhibition, Ottawa, 1914.

Some Weather Observations taken at Central Experimental Farm, Ottawa—*Con.*

——	Mean Temperature.	Highest Temperature.	Lowest Temperature.	Total Precipitation.	Heaviest in 24 hours.	Total hours Sunshine.	Average Sunshine per day.
February.	°	°	°	In.	In.		
Ottawa	19·36	40·0	−10·5	2·21	0·40	100·3	3·54
Fort Vermilion	0·20	27·5	−43·0	0·35	0·30	114·7	4·09
March.							
Ottawa	25·99	45·6	3·0	0·67	0·23	211·5	6·82
Fort Vermilion	17·23	55·0	−22·5	0·80	0·25	166·7	5·37

Record of Sunshine at Fort Vermilion, Peace River District, Alberta, from April 1, 1914, to March 31, 1915.

Months.	Number of days with Sunshine.	Number of days without Sunshine.	Total hours Sunshine.	Average Sunshine per day.
April	30	0	255·2	8·50
May	31	0	392·3	12·65
June	28	2	287·8	9·59
July	28	3	335·4	10·81
August	28	3	297·1	9·58
September	23	7	163·7	5·45
October	18	13	128·2	4·13
November	13	17	43·9	1·46
December	18	13	60·1	1·93
January	23	8	63·9	2·06
February	24	4	114·7	4·09
March	25	6	166·7	5·37

WILLIAM T. ELLIS,

Observer.

EXPERIMENTS AT ST. BRUNO AND FORT RESOLUTION, NORTHWEST TERRITORIES.

ST. BRUNO.

The St. Bruno farm is situated some 20 miles west of Fort Smith. The land was first broken in 1911, four missionaries, with a small herd of cattle and a few horses, settling there.

Two fields were laid out and broken. In 1912 and 1913 the land had not yet been sufficiently worked to yield good crops, but in 1914 good returns were obtained.

Oats, barley, and wheat were grown successfully; also such vegetables as carrots, table beets, onions, lettuce, radishes, peas, and potatoes.

The original herd of eighteen head has now increased to fifty, and some 500 pounds of butter were sold during the season of 1914.

FORT RESOLUTION.

The winter of 1913-14 was severe, and the spring late, snow remaining on the ground until the third week in May. Seeding was completed by May 30, and favourable weather made germination rapid.

Growth was hastened by frequent showers during June and July. There was a slight frost on August 18, and stormy weather in September lodged the oats and barley. Harvesting took place from September 15 to 20, just in time to escape severe frost on the 22nd.

Oats (Eighty Day), barley (Manchurian), wheat (Prelude and Marquis) gave good crops. Four varieties of potatoes were grown successfully; also beans, peas cabbage, carrots, table turnips, beets, and lettuce. Many varieties of flowers bloomed freely.

EXPERIMENTS AT GROUARD, LESSER SLAVE LAKE, ALBERTA.

The wet summer and autumn of 1913 prevented fall work on the land, and when the frost was sufficiently out of the soil about April 18, special efforts were required to get the seeding done at the usual time. This was finished during the first days of May, under favourable conditions for quick growth.

Eighty Day oats were ripe on August 1, Abundance on the 14th, and Banner on the 15th. The latter yielded 45 bushels per acre. In wheats, Early Red Fife, ripe August 18, yielded 27 bushels per acre; Prelude was ripe August 20, and Marquis August 26, yielding 29½ bushels per acre. Preston ripened the same day, and gave 28 bushels per acre. Mensury barley was ripe August 10, giving 40 bushels per acre.

In vegetables, cabbage, cauliflower, celery, tomato, squash, garden peas, beets, lettuce, onions, and carrots all did well. Many varieties of flowers bloomed profusely throughout their season.

EXPERIMENTS AT GRANDE PRAIRIE, ALBERTA.

Spring was very backward at this point, and the weather cold and dry, retarding germination, which was further injured by the fact that a large proportion of the grain had been sown on stubble owing to the bad weather of the preceding fall preventing work on the land.

Potatoes and roots were a failure for the first time in five years.

Three varieties of wheat were tested, Marquis, Prelude, and Preston. They were all grown on summer-fallow. Marquis and Preston yielded about 30 bushels per acre, and Prelude 20 bushels.

The crop of timothy ran about 1 ton to the acre. Clover was winter-killed except in small patches.

EXPERIMENTS AT SALMON ARM, B.C.

Experimental work, chiefly along horticultural lines, was continued by Mr. Thos. A. Sharpe, on his farm at Salmon Arm.

There was an unusual amount of frost in the ground during the winter of 1913-14, and the melting snows of the spring did not penetrate the soil to any depth. Spring rains were light and the summer dry, so spring grain and bush fruits were light crops, and grass and clover a practical failure.

Potatoes and roots were below average in yield.

The experimental orchard gave a medium yield.

Tests were also carried on with different varieties and strains of vegetables.

Clover and alfalfa have done well in the Salmon Arm district. They should play a large part in farming operations there which, in Mr. Sharpe's opinion, should be a combination of dairying and fruit-growing.

METEOROLOGICAL REPORT for the Year ending March 31, 1915.

—	Highest Temperature.		Lowest Temperature.		Rainfall.	Snowfall.	Sunshine.	
1914.	°	Date.	°	Date.	Inches.	Inches.	H.	M.
April	74	30	27	21	0·89	....	161	54
May	88	31	30	5	0·96	....	260	36
June	90	30	38	6	1·43	....	200	42
July	96	30	40	23	0·76	....	284	24
August	93	1	38	30	0·32	....	298	36
September	82	2	34	15	1·52	....	122	0
October	68	14	30	4	1·25	....	120	36
November	54	10	18	15	2·16	4½	28	30
December	42	4	5	19	....	12	23	12
1915.								
January	36	2, 7, 9	1	20	....	21½	40	48
February	44	20	14	13	0·20	2½	51	48
March	65	21	20	2	0·95	....	158	54
					10·54	40½	1,752	0

DIVISION OF FIELD HUSBANDRY.

The work of the Field Husbandry Division is being directed along very practical lines. Its scope may be said to include:—

1. Soil management.
2. Crop management.
3. Agricultural engineering.

Besides conducting experimental work along the lines outlined above, this division supplies grain and fodder for the up-keep of the live stock on the Farm.

The lines of work herein reported upon do not by any means cover the field naturally included in the Division for the reason that only a limited acreage of suitable land is available for experimental tests.

WEATHER CONDITIONS AND CROP YIELDS.

Seeding operations were carried on under unfavourable conditions. April was cold, which retarded seeding, while the drought of the months of May and June resulted in the uneven germination of corn and mangels. Hay made slow growth and yielded below the average. Straw was short, but the oats filled fairly well and harvested a good yield of grain. Turnips made steady progress, while mangels and corn made remarkable autumn growth, and all yielded up to the average for the Farm. Potatoes produced a bumper crop of good quality.

COST OF PRODUCTION OF FIELD CROPS.

The following table summarizes the costs of producing mangels, corn, oats, and hay in 1914:—

Cost of Production of Field Crops, Central Farm, 1914.

Crop.	Area.	Yield Per Acre.		Cost to Produce.		
		Bushels.	Per acre.	Per ton.	Tons.	Per bush.
	Acres.			$ cts.	$ cts.	Cents.
Mangels	4	17	565	37 52	2 21	6·64
Ensilage corn	32	14·5	....	20 85	1 44	....
Oats	40	....	65	14 97	....	19.37
Oat straw	40	1·04	....	....	....	....
Hay	28	2	....	15 75	7 87	....

ROTATION OF CROPS.

The results of experiments with crop rotations indicate the importance of the order in which crops are grown. A good rotation may be said to include hoed, grain, and hay crops which, for best results, should be grown in the order named. The duration and cultural treatment of the rotations, however, may be varied to suit different conditions. The following rotations are now in operation here, any one of which should prove satisfactory for ordinary farm conditions.

Rotation "A" (five years' duration).—Hoed crop, manured. Grain, seeded down with clovers and grass. Clover hay, top dressed with manure in autumn. Timothy hay, field ploughed in August, top worked and ribbed up in October. Grain, seeded down with red clover to be ploughed under the following spring, when the succeeding hoed crop is corn.

Rotation "B" (five years' duration).—Hoed crop, manured. Grain seeded down with clovers and grass, seeds top dressed with manure in autumn. Clover hay, ploughed in autumn. Grain seeded down with clovers and grass. Clover hay.

Rotation "C" (four years' duration).—Hoed crop, manured. Grain, seeded down with clover and grass. Clover hay, timothy hay, field ploughed in August, top worked and ribbed up in October.

Rotation "D" (three years' duration).—Hoed crop, manured. Grain, seeded down with clovers and grass. Clover hay.

Soiling Crop, Rotation "R" (three years' duration).—Corn for early fall feed, manured. Peas and oats to cut green, seeded down with clovers and grass. Clover hay, to cut green.

Some characteristics of the above rotation, desirable under almost any conditions, are as follows:—

(1) Grain fields are always seeded down with clover, even though it be used only as a fertilizer, as in the case of the fifth year of rotation "A."

(2) Grass and clover seedings are heavy. Increased crops of hay and rare failures of a catch have justified them.

(3) Hoed crops form a large proportion of every rotation. An attempt to farm a small area without a hoed crop was not successful. Weeds could not readily be kept in check.

(4) No field is left in hay for more than two years. Our records show that the second crop almost always costs more than the first per ton, and that succeeding crops are very liable to be grown at a loss.

(5) Barnyard manure is applied frequently in comparatively small quantities, rather than at long intervals in large quantities.

The following record shows the comparison of the chief items in connection with these rotations:—

COST, Returns and Net Profits or Losses of Rotations "A," "B," "C," "D," and "R."

Rotation.	Cost to operate per acre.	Value of returns per acre.	Profit or loss per acre, 1914.	Profit, average of 8 years 1904–11.
	$ cts.	$ cts.	$ cts.	$ cts.
A (five years' duration)	17 21	18 14	9 93	8 78
B (five years' duration)	17 13	18 63	1 50	9 03
C (four years' duration)	16 83	15 62	−1 21	8 15
D (three years' duration)	18 83	18 17	0 66	10 08
R (three years' duration)	18 76	19 49	0 73*	

*Records kept for two years only.

SHALLOW PLOUGHING AND SUBSOILING VERSUS DEEP PLOUGHING.

This experiment has been under way for eleven years. Two four-year rotations differing only in the preparation of the sod land for corn or roots as mentioned above are used but the results have not yet shown any decided advantage in favour of either method.

COMMERCIAL FERTILIZER AS A PART SUBSTITUTE FOR BARNYARD MANURE.

In 1913 there were completed five years of experiments designed to supply information concerning the relative fertilizing merits in regular farm rotation of:—

(1) No manure or fertilizer of any kind but pastured one year in four (records kept for two years only).

(2) Barnyard manure.

(3) Complete commercial fertilizer.

(4) Barnyard manure, together with commercial fertilizer. The results show a distinct advantage in barnyard manure alone over commercial fertilizer alone for this soil, but point to the possibility of combining the two to good advantage when barnyard manure is scarce or high in price.

DIVISION OF CHEMISTRY.

During the latter half of the year just closed the work of this Division has been carried forward under considerable difficulties, enlistments for active service and resignations having very seriously depleted the staff. The dislocation of the organization and the unavoidable interruption in the work, both investigational and casual, will be appreciated when it is stated that within five months the staff has lost no less than four of the five assistant chemists upon whom, naturally, the major part of the analytical work falls.

Notwithstanding these adverse circumstances, much has been accomplished. The larger number of investigations in course for some time past have been proceeded with and some new ones, occasioned by conditions brought about by the European war, have been instituted.

As far as has been possible, the many and ever-increasing requests from farmers for analytical work and advice have been attended to, but owing to the circumstances already referred to there has resulted a large accumulation of these matters, and the Division asks for the exercise of patience on the part of its correspondents, who may rest assured that their requests will be dealt with at the earliest possible moment.

The "Patriotism and Production" campaign recently carried on throughout the Dominion has added greatly to the labours of the Division in many ways. Special articles, circulars, and bulletins have been written and issued on subjects of vital importance to a greater and more economical production of crops. The campaign also awakened a more lively interest in farming matters and resulted in a very large increase in the number of correspondents and of the samples of soils, feeding stuffs, etc., sent in for examination. Of these samples the record book of the Division shows that nearly 4,000 were received during the year—more than 1,000 over the number of the preceding year.

The investigation undertaken in 1912 to ascertain the influence of various cultural systems upon the moisture content of the soil has been continued on several of the branch Farms and Stations of Manitoba, Saskatchewan, and Alberta. Throughout the growing season, soil samples are collected on the plots under experiment with a view of determining the amount and distribution of the moisture to a depth of 6 feet. The results of the analyses should show the extent to which the soil moisture has been conserved by the several cultural operations. So far they have afforded evidence of the value of early and fairly deep ploughing on summer-fallows; of the subsurface packing of light soils and of frequent cultivation of fallows in order to check surface evaporation.

The examination of soils from districts under irrigation in Alberta has been continued, and a considerable addition to our knowledge of these areas has been gained. The more immediate objects of this work are to define the areas in which injurious alkali occurs and to ascertain the suitability of the districts in question for the carrying on of successful farming operations under irrigation. The progress of the analytical work has been much hindered by the loss of the assistants who had gained considerable skill in its conduct, but the prospects are now good for the more rapid prosecution of this wide and important investigation.

The European war entirely cut off the Canadian supply of potash compounds used in fertilizers. The sole source of these compounds for the world has been for many years the extensive mines at Stassfurt, Germany. With the view of supplying this deficiency, inquiry has been made as to our natural supplies of potash and, among several researches to that end, analyses have been made of the varieties of seaweed occurring more abundantly on the Pacific and Atlantic seaboards. Many of these seaweeds have been found rich in potash and nitrogen and evidently of great value for fertilizing purposes.

In this connection a practical trial is being made at Clark's Harbour, N.S., in the preparation of dried, ground seaweed for use as a fertilizer, and the prospects at the time of writing are good for the success of the undertaking.

The influence of environmental condition on the composition of wheat is the subject of a research commenced some years ago. It has already yielded results of national importance in showing that climatic conditions may profoundly modify the protein content of the grain, and incidentally that high temperatures accompanied by a fairly dry soil during the filling out of the kernel—conditions characteristic of the wheat-growing areas of the Northwest—are conducive to a hard berry with a high gluten content. The scope of this work has been greatly extended and its value enhanced through the co-operation of the Meteorological Service, which has undertaken the tabulation of weather statistics at the various points throughout the Dominion at which we are conducting this experiment and the correlation of these data with the crop yields.

The experimental work with fertilizers begun two years ago at the branch Stations at Fredericton, N.B., and Kentville, N.S., has been continued. The season of 1914 has yielded results that, in the main, confirm those obtained in 1913, namely, that for potatoes on soil in fair condition as to richness and tilth, moderate dressings, say about 500 pounds, have proved the most profitable (though not necessarily giving the largest yields), and that in the larger number of trials better returns have followed the application of a mixture containing all three elements of plant food than where one or two of the elements only have been furnished. These are the two outstanding results of general application and value.

Plans have been perfected for extending the investigational work with fertilizers on systematic and scientific lines. For the past two years preparations for this have been made at five of the branch Farms and Stations by cropping, without manure or fertilizer, several series of plots. The scheme of fertilizing has been carefully thought out and made as complete as the size of the area set apart for the work would permit. It is proposed to put these plots under a four-year rotation: first year, potatoes, roots or corn; second year, grain seeded with clover and timothy; third and fourth years, hay.

The analysis of sugar beets grown on fourteen of the branch Farms during the season of 1913 has given most satisfactory results, thus furnishing further evidence of the suitability of the soil and climatic conditions in the widely distant parts of the Dominion for the production of roots rich in sugar. The varieties tested were Improved Vilmorin A and B, Très Riche, and Klein Wanzleben, the seed being obtained from Messrs. Vilmorin, Andrieux et Cie., Paris, France. This investigation dates back to 1902, so that the results are becoming increasingly valuable for those inquiring as to the possibilities of Canada as a sugar-producing country.

Among many fodders and feeding stuffs examined may be mentioned a series of field roots—mangels, turnips, and carrots—grown on the Central Farm, Ottawa. The object of this investigation, now in its ninth year, has been to ascertain as far as might be possible by analyses, the relative feeding value of the various classes of roots and of the several varieties of each class. In the mangels, more particularly, it has been found that large differences in dry-matter content exist among the varieties as commonly offered for sale.

The number of well waters examined for farmers during the year was 336. From the correspondence on the subject it is evident that an increasing interest is being taken in the matter of the home water supply, and that, speaking generally, farmers are becoming more and more alive to the desirability of a pure supply both for domestic and stock use.

The nitrogen content of the rain and snow as falling at Ottawa (Central Experimental Farm) has been determined. During this eighth year of the investigation, ending February 28, 1915, the precipitation has been below the average, but this did not reduce the amount of available nitrogen for enrichment of the soil per acre, furnished by these sources. The average for the previous seven years is 6·182 pounds, the amount for the past year, 7·897 pounds per acre.

The samples submitted for examination and report by the Meat Inspection Division, Health of Animals Branch, during the year 1914-15, numbered 662. These comprise dyestuffs, preservatives, pickling solutions, spices and condiments, evaporated apples, preserved meats, etc., collected at the various packing houses and canneries throughout the Dominion. This important work, which is steadily on the increase, calls for a large amount of skilful and careful analytical work, necessitating in many cases the devising of special methods which can only be determined upon after considerable time spent in research.

HORTICULTURAL DIVISION.

The experimental Farms and Stations, situated as they are in many parts of Canada where both the summer and winter climates vary in a marked degree, give abundant opportunities for finding out what are the best horticultural crops and varieties to grow in Canada and how best to grow them.

WORK AT THE BRANCH FARMS AND STATIONS.

The Experimental Station at Sidney, Vancouver Island, B.C., one of the newer Stations, received considerable attention from the Horticultural Division in 1914. During that year there was no superintendent and, in order not to lose any time, plans were made at Ottawa for the plantations there, and material was ordered. As a result, some 15 acres of fruits were set out. Among the fruits being tried are apples, peaches, pears, plums, cherries, apricots, nectarines, quinces, persimmons, figs, and citrus fruits. Of nut trees, there are English walnuts, chestnuts, filberts, and almonds, and there will be others later on. Plantations of holly and cascara were also set out. Provision was made in the plans for a test of many species of ornamental trees, shrubs, and herbaceous plants, a large number of which were set out in 1914.

At the Experimental Station, Fredericton, N.B., another of the newer Stations, 11 acres of orchard were set out, consisting mainly of trees of apples, pears, plums, and cherries. These orchards are arranged both for cultural experiments and the testing of varieties. An addition of 3½ acres was made to the orchards at the Experimental Station at Ste. Anne de la Pocatière, Que., where a good start had been made the year before. At the new Station at Lennoxville, Que., the land was prepared for an orchard to be planted in 1915. A nursery was established to make provision for trees needed on the ornamental grounds when the land is ready.

At the older Farms and Stations there was considerable development in the horticultural work. Perhaps one of the most interesting experiments on the prairie Farms at present is the testing of many thousand seedling trees raised from the hardiest of the Russian apples. It is hoped to obtain from this large number some varieties of good size which will be hardy and better in quality than any of those available at present. There was a marked difference in the hardiness of individual specimens in 1914. The cross-bred apples originated by the late Dr. Wm. Saunders, though small in size, continue to show superior hardiness to any of the large varieties of apples. These have now fruited at all the prairie Farms. So far, the best crops of true apples have been obtained at the Experimental Station, Lethbridge, Alta., where a number of varieties bore in 1914 as in 1913 also.

HORTICULTURE AT THE CENTRAL FARM.

The new greenhouses recently erected for the Horticultural Division have proved very satisfactory, and a number of interesting experiments have already been tried there. The growing of greenhouse grapes in large pots is practically unknown in Canada and, to show what might be done, these were given a trial and good results were obtained. Black Hamburgh and Foster Seedling were two of the best varieties. By growing grapes in pots, persons with small greenhouses need not devote a part permanently to grapes, but may put the pots outside when the fruiting season is over and afterwards store the vines in a cellar. Tomatoes grown in 12-inch pots also gave good results. There was an excellent show of the best chrysanthemums in November. Plant-breeding work was carried on under glass. Crops of melons, cucumbers, cauliflowers, beans, and lettuce were also raised.

The fruit crop was a good one in 1914 at the Central Experimental Farm, it being clean and well grown. As fire pots for protecting crops from frost have been used successfully in the Western States, four hundred of these were purchased in 1914 for experimental work, and while the season was particularly free both from late spring and early autumn frost, some interesting results were obtained in showing that the temperature could be raised several degrees by this means.

Especial attention is being given to the breeding of new fruits, vegetables, and flowers. Early-bearing varieties of fruits, early strains of vegetables, and improvements in a few kinds of flowers were some of the lines on which this work was continued in 1914.

Experiments with ornamental plants were continued, and very useful additional information in regard to herbaceous plants was obtained. The rose garden is now a striking feature of the ornamental grounds at the Central Farm.

DIVISION OF CEREALS.

The season of 1914 was, on the whole, not very favourable for cereals. Severe drought was experienced—at one period or another—over large areas of country. Western Quebec and eastern Ontario suffered chiefly during the early part of the season, while southwestern Saskatchewan and southeastern Alberta were very seriously affected throughout the whole summer. Districts which had a fair rainfall produced excellent crops. Particularly successful were central Alberta, southwestern Ontario, and parts of the Maritime Provinces.

Cereal crops on the Experimental Farms and Stations were generally good, the methods of seed selection and soil cultivation employed being such as to reduce to a minimum the damage caused by unfavourable weather of any kind.

While the experimental work with cereals was somewhat interfered with at two or three of the Farms by the abnormal conditions, the results of the season were, on the whole, satisfactory so far as yield of grain is concerned.

NEW STATIONS.

Cereal investigations are always carried on at a great disadvantage when the land is lacking in uniformity. It is therefore usually impossible to begin successful tests of varieties during the first two or three years after the establishment of a new Station.

The soil difficulties at Cap Rouge, Que., are now clearly understood, and as the chief of these can be easily remedied (by the application of lime) it is expected that this year the test plots will give much more satisfactory results than they have hitherto done.

Suitable land has been set aside for the growing of cereals at Ste. Anne de la Pocatière, but trial plots will not be established until an efficient system of drainage has been arranged. This will probably be done during the present year.

A beginning is to be made at Fredericton this spring. While the land is as yet rather uneven for experimental work, it is believed that valuable results can be reached by the plan which is being adopted, namely, to sow four plots of each of the varieties under trial.

At Kentville, N.S., it is proposed to grow only a very small number of the best varieties, and to have a large plot or a small field of each sort.

A series of plots will be sown this spring at Invermere, B.C., on irrigated land. A small number of varieties will be tested—sufficient, however, it is believed, to serve as a guide to farmers in the Columbia valley. These plots will be in duplicate, one series receiving more water than the other.

MARQUIS WHEAT.

Marquis wheat has won its fourth successive triumph in international competitions. The latest victory was at the Dry-farming Congress at Wichita, Kansas, last autumn, when an exhibit of Marquis grown by Mr. Seager Wheeler, of Rosthern, Sask., was awarded the highest score.

Marquis now holds, almost undisputed, the first place among varieties of spring wheat in Canada. It is also highly esteemed in parts of the United States which touch the Canadian border; and it has given an excellent account of itself in Colorado, at high altitudes, where early-ripening varieties are needed.

PRELUDE AND PIONEER WHEATS.

These very early-ripening varieties, which have been before the public for only a short time, have shown themselves well adapted for some districts for which there has hitherto been no suitable sort. Prelude, by its extraordinary earliness, makes wheat growing profitable in localities where ordinary varieties are almost always damaged by frost late in August; and Pioneer, though a less useful sort, is the only very early wheat yet introduced which is at all suitable for dry districts.

OTHER GRAIN.

While the work with the other kinds of grain is unavoidably receiving less attention than is given to spring wheat, many new cross-bred and selected sorts of barley, peas, flax, and oats are under test. The best of these will be brought to the attention of the public just as soon as they have been sufficiently tested. The premature introduction of imperfectly studied varieties is being carefully avoided.

MILLING AND BAKING TESTS.

The usual extensive tests of new varieties of wheat have been carried on during the past winter. The studies of the effects of storage on flour have also been continued, and experiments have been conducted with a view to obtaining more precise information in regard to the exact conditions necessary for the production of the best kinds of bread.

DISTRIBUTION OF GRAIN AND POTATOES.

The annual free distribution of small samples of seed grain and potatoes is being conducted as usual. Owing to the very dry weather last season at some of the Farms where the seed grain was produced, the quality of part of the material for distribution is not quite so good as usual; but great care is taken to ensure that only grain of the very highest possible degree of purity is sent out.

As the experience of many years has shown that potatoes raised at Ottawa are usually inferior for seed purposes to those produced in the cooler climate of the Maritime Provinces, arrangements are being made to distribute, this year, only potatoes grown in New Brunswick. We believe that this seed will give entire satisfaction to the farmers of Ontario and Quebec.

DIVISION OF BOTANY.

After the return, towards the end of April, 1914, of the Dominion Botanist from Europe, where he attended, as the official delegate of the Dominion, the International Conference of Phytopathology held at Rome, arrangements had to be made to fill the vacancy on the staff of the Division caused through the resignation of the chief assistant, Mr. J. W. Eastham, B.Sc., who was appointed to the post of Provincial Plant Pathologist for British Columbia.

Prof. John Adams, M.A., formerly connected with the Royal College of Science, Dublin, Ireland, received the appointment as Assistant Dominion Botanist.

Mr. F. Lisle Drayton, B.S.A., a graduate in biology from the Macdonald College, was appointed Assistant in Plant Pathology and Bacteriology.

The work of this Division has steadily increased. The special attention which is being paid to the control of plant diseases and to a general plant pathological survey of the Dominion, emphasizes the necessity for considerable experimental work and increased activity in this direction. It appears that, no matter how recently land may have become utilized for agricultural purposes, the economic crops soon fall a victim to destructive diseases, which may cause either a direct reduction in yield, or considerable trouble through loss of trade.

DESTRUCTIVE INSECT AND PEST ACT.

A striking example of the latter is afforded by the disease "powdery scab" affecting potatoes. This disease, known for nearly a century in Europe, has been recorded for the first time on the continent of America. Its presence here was regarded by the Dominion Botanist as of scientific interest, and was recorded merely from this point of view. It resembles closely the common potato scab, and is in the opinion of nearly all plant pathologists who have had experience with it, a minor disease, which deserves no more attention than the well-known common scab, which is distributed all over the world. Even under Canadian conditions, the disease, which has been most carefully watched since it first came under observation, has shown itself certainly more harmless in effect than "late blight" or "black leg" or other well-known potato diseases.

There was little reason for this disease to become practically the most notorious plant disease known in Canada. As is well known, the United States authorities considered the disease in quite a different light. They regarded it, because of their having had no actual experience with it, as very suspicious and of sufficient importance to warrant their placing an embargo on all Canadian potatoes. This action made the disease at once—at any rate to the growers and shippers of the Dominion—the most important potato disease. Under ordinary circumstances, the disease would have been dealt with in the manner its minor character deserved, but the embargo affected very seriously the market for the crop of Eastern Canada. For this reason, negotiations were begun by the expert of our department, who was instructed to discuss the conditions under which the embargo would be raised. In June, the Dominion Botanist interviewed the United States Federal Horticultural Board, who were prepared to permit the importation of potatoes, providing certain conditions would be fulfilled. These conditions required certification of all potatoes, after inspection of farms and of the potatoes prior to shipment from the defined so-called "infected area" within the Dominion. The conditions were regarded as very complicated, and their enforcement would require a large staff of inspectors and a considerable expenditure. The department, however, desirous of accommodating the agricultural population of Eastern Canada, who are prominently engaged in raising potatoes, caused these regulations to be explained to the shippers who were most actively interested, i.e., those of New Brunswick. The same conditions were laid by the United States authorities upon the state of Maine (and later New York), on finding these states infected by the same disease. The Canadian shippers unanimously agreed to accept the conditions, and, on representation to this effect being made, the embargo was temporarily lifted from Canada under the conditions exacted. (See circular No. 6, entitled "Regulations under the Destructive Insect and Pest Act governing the Importation, Sale, Shipment, and Exportation of the Common or Irish Potato [*Solanum tuberosum* L.)."

Inspection of potatoes began in December, 1914. A number of inspectors were specially instructed and trained in the laboratories and under the direct supervision of the Dominion Botanist. The work of inspecting all potatoes for export to the United States and to the disease-free area of the Dominion was immense, but was carried on faithfully and to the best of human possibility. From December 13, 1914, to February 26, 1915, 49,343 bushels of "first-grade potatoes" were certified for export to the States, and up to March 31, 1914, 36,689 bushels for the disease-free area of the Dominion. Table potatoes were inspected and certified for the Dominion during the above period, amounting to 440,038 bushels. Altogether, 526,070 bushels of potatoes have been inspected and certified during these months. However, on February 26, a car of Canadian potatoes was held up by the United States inspectors because of the potatoes having been found to be infected with powdery scab. On inquiry it was learned that the official inspector of the United States found, after seven hours' search, two potatoes very slightly affected with this scab. In accordance with the United States regulations relating to the importation of foreign potatoes, the permits issued by the board were cancelled, and further permits were refused. Since then no further exports of Canadian potatoes to the United States have taken place.

From our experience with powdery scab in Canada, and from the experience of plant pathologists of repute in Europe, we were more inclined than ever to the view-point that this disease was not of a character to warrant any such drastic measures. The time, no doubt, will come when the United States authorities will change their attitude towards the disease.

The inspection of the potatoes, quite aside from the question of powdery scab, has been found to improve greatly the quality of potatoes shipped outside the infected area. This work is being greatly appreciated by the shippers and a large number of farmers. They both realize that the continuation of the inspection would be most beneficial. If it is thought desirable to continue this work, the shippers have expressed their readiness to pay an inspection fee, which attitude is considered quite correct. Meanwhile, experiments are being conducted by the Division relating to effective control measures to be taken against the disease.

EXPERIMENTAL AND OTHER WORK OF THE DIVISION.

A large number of specimens of diseased plants were sent in for examination and advice. The experimental work connected with plant diseases included a series of experiments on potato diseases. The prevention of common scab, investigation into the nature, cause, and prevention of more obscure diseases of potatoes, as mosaic, leaf roll, early dwarf and internal streak or net necrosis are still receiving the attention of the scientific staff of the Division. The Dominion Botanist, during July and part of August, in company with a number of United States plant pathologists, visited a large number of potato fields in the United States to study the diseases as they occur in the fields. Such visits have been found of great value to the growers, who have taken a keen interest in them, and who will benefit from the experience, explanations, and suggestions for the control of various troubles. The work will be continued this year in various localities of the Dominion.

Mr. J. Adams was absent for several weeks in Prince Edward Island, where he delivered a series of lectures explaining the question of powdery scab and the new potato regulations.

Miss Faith Fyles, an assistant in the Division, was absent in the Western Provinces during the summer to collect exhibition specimens of the common weeds. She also superintended the growing of these weeds in Ottawa to secure seedlings at their various stages. It is intended to prepare a comprehensive exhibit of the weeds of Canada, showing their development from the seed to the mature plant. Farmers who are in a position to recognize the noxious weeds in their seedling stages, and who commence at such time their eradication, will find the weed problem far less troublesome than those who attack the weeds when they have matured and probably already provided for their perpetuation. The specimens collected have been exceedingly well prepared, and have been arranged for exhibition in a unique and original manner, which will prove most useful.

The number of weeds and wild plants sent in for identification was very large, about 1,000 having been identified and reported upon.

The usual progress was made with the herbarium of the Division and in the botanic gardens. Considerable time was spent in arranging, cataloguing, and indexing the botanical library.

The St. Catharines Field Laboratory is proving of greater value and assistance every year. Very valuable experiments in the control of fruit-tree diseases are being conducted by Mr. McCubbin, the assistant in charge.

A detailed account of the work of the Division of Botany will appear as usual in connection with the Farm Reports.

DIVISION OF ANIMAL HUSBANDRY.

The scope of work of this Division, as in the past two years, includes directly the care, breeding, housing, and marketing of all classes of live stock and their products on the Central Experimental Farm, together with the testing of foodstuffs and the methods in the care and management of stock and of all machinery pertaining thereto. In consultation with the branch Farm superintendents, this Division also assists largely in these various operations on all the branch Farms where live stock is maintained, thus systematizing and consolidating the live stock experimental work.

The live stock work on the Central Experimental Farm was carried on under most unfavourable circumstances during the first part of the fiscal year. The lack of proper buildings was a serious handicap both in the routine work of breeding and feeding, and also in the experimental work along these lines. The summer feeding work was most discouraging owing to the severe drought, which caused extremely poor pasture on the all-too-limited pasture area. The green feed supplied by the Field Husbandry Division to assist in supplementing the shortage of pasture was also a partial failure. Hence, all classes of live stock were fed under most trying circumstances. However, the excellent crop of corn for ensilage facilitated the live stock operations in the fall and winter.

There are now 503 head of live stock in the stables, made up as follows: 159 head of cattle, 26 horses, 98 sheep, and 220 swine.

HORSES.

The horses on the Central Experimental Farm are expected to do all labour connected with the various Divisions. This number of horses includes also four pure-bred Clydesdale mares and four grade Clydesdale mares of good quality and breeding. Breeding operations were started with these mares in the fiscal year ending March 31, 1914. Unfortunately, the four foals were all lost, due to being carried from two to four weeks over time. Two of the mares, more or less subject to intestinal trouble, were lost during the year. These are the only serious losses in our live stock work, and are much to be regretted. A number of the mares are in foal again, and with a promise of better success. Experimental work along the lines of feeding, care, management, and housing of pregnant mares and foals will be carried on.

The horse labour supplied to the various Divisions on the Central Experimental Farm amounted to 7,174 days, which, at the conservative value of 70 cents per day, gives a total return of $5,021.80.

No experimental horse feeding work was conducted during the year.

DAIRY CATTLE.

The pure-bred dairy herds, as previously reported, are Ayrshires, Canadians, Guernseys, Holsteins, and Jerseys. All these herds have made a normal growth during the year, and have given satisfactory returns.

The grading experiment with grade Ayrshires and grade Holsteins has been continued with marked success, and the cows have given excellent returns.

DAIRY CATTLE FEEDING EXPERIMENT.

Many new phases of dairy cattle feeding experimental work have been taken up during the year. Some of the results of these experiments are found in the detailed report of the Dominion Animal Husbandman. Briefly, the lines of work studied are: (1) a continuation of the investigation of the value of molasses and molasses meals in replacing a good grain mixture for milch cows: (2) an investigation of the value of molasses in replacing succulent roughages, such as roots and ensilage; (3) the value of the various grades of elevator by-products (screenings) for the feeding of milch cows; (4) the value of molasses in making some of the elevator by-products more palatable; (5) an investigation as to the value of the various patented calf meals as compared with a good home-made calf meal, with and without whole milk, skim-milk, and buttermilk, in calf feeding.

MILKING MACHINES.

With the completion of the new dairy barn in the fall of 1914, the Sharples and the Burrell-Lawrence-Kennedy milking machines were reinstalled. A series of experiments comparing these two machines with each other and with the best hand milking, from the standpoints of commercial, bacteriological, and pathological values, was started. This experiment will continue over a period of a year or more. Mention, however, is made of some of the results to date in the report of the Dominion Animal Husbandman. In addition to these two machines there are also being tried the Empire and the Lister milking machines.

DAIRY COW RETURNS.

It will again be noted that the quality of the dairy cattle on the Central Experimental Farm has made a marked improvement. The average profit per cow has again increased over $8 per head per annum. Particular attention is drawn to the fact that many of the best cows have not completed their lactation periods at the end of the fiscal year, hence the following table is no definite criterion as a comparison of the breeds. The following is a brief summary showing the returns of some of the cows, the profits being based on the following valuations: Butter, 30 cents per pound; skim-milk, 20 cents per hundredweight; pasture, $1 per head per month; hay, $7 per ton; straw, $4 per ton; green feed, $3 per ton; and meal, $25 per ton.

No. of Head.	Age.	Breed.	Average Days in Milk.	Average Pounds Milk produced.	Average per cent Fat.	Average Profit over Feed between calvings. (Labour, Manure and Calf not included).
	Years.					$ cts.
50	3 and over..	All breeds and grades...	364	8,108·3	4·47	68·74
5	3 " ..	Ayrshire..	342	8,148	4·15	58·50
5	3 " ..	Canadian	386	7,863	4·80	81·67
5	3 " ..	Guernsey...............	352	7,263	5·55	90·31
5	3 " ..	Grade Ayrshire.........	343	9,522	4·02	77·07
5	3 " ..	Grade Holstein.........	452	12,976	3·57	92·23
2	2 " ..	Holstein...............	408	7,680	3·63	42·22
4	3 " ..	Jersey.................	372	7,998	5·68	110·41

Attention is drawn to the fact that butter valued at 30 cents per pound is equivalent to milk at only $1.65 per hundredweight; yet, in reality, the manufacture and sale of cream cheese, Coulommier cheese, and certified milk, with a large part of the milk, has netted $3 per hundredweight. The above valuations are useful for the comparison of production with the average herds throughout Canada.

BEEF PRODUCTION.

It is to be regretted that, owing to the lack of buildings, no beef-breeding work or beef-feeding investigation work has been conducted on this Farm during the past year.

SHEEP.

Although the great difficulty of the sheep investigation work, namely, the shortage of available land, continues, yet better results than usual have followed the work of the past fiscal year. Breeding work on a small scale with Shropshires and Leicesters has been most successful. Aside from this, a feeding experiment with 120 lambs, investigating the feeding value of elevator by-products and screenings, was conducted, giving valuable results and showing a reasonable margin of profit.

SWINE.

Considering the shortage of pasture, another successful year is to be reported for swine husbandry. The three breeds of swine, namely, Yorkshire, Tamworth and Berkshire, have bred exceptionally well, and there are now in our pens one of the finest lots of breeding stock in Canada.

Several lines of investigation work in the feeding of swine were conducted. Briefly these are: (1) the value of tankage and other foodstuffs in feeding pregnant brood sows, both in the winter and summer; (2) the value of tankage and other meals as milk substitutes, fed in conjunction with other meals to young pigs during and after weaning; (3) the value of elevator by-products (screenings) in feeding four-month shoats for the market. Very valuable data have been acquired in these experiments, which may be found in the report of the Dominion Animal Husbandman.

LIVE STOCK BUILDINGS.

Under my supervision, the Animal Husbandry Division has during the past year finished the preparation of plans and largely supervised the erection of the new dairy barns at the Central Experimental Farm, Ottawa. Illustrations and brief specifications of these barns may be found in the report of the Dominion Animal Husbandman.

Many plans of farm buildings, and specifications for the same, have been sent out to farmers free of charge. It is to be hoped that this work will stimulate the keeping of better farm buildings throughout Canada.

MISCELLANEOUS.

The correspondence of this Division pertaining to the feeding, breeding, care, and management, and housing of animals, together with the prevention and treatment of many of the minor ailments of all classes of stock, has largely increased during the past year.

The Dominion Animal Husbandman, in attending to his duties outside the Central Experimental Farm, has officially visited all of the branch Farms in Canada where live stock work is being conducted. In addition to such official trips, both he and the Assistant Dominion Animal Husbandman have made many trips, attending a large number of meetings in various parts of Canada, judging at numerous exhibitions, and studying live stock conditions and the needs for experimental and demonstrational work relating to live stock.

DIVISION OF FORAGE PLANTS.

The work of the Division of Forage Plants has, during the year, been carried on with the following objective points:—

(1) The ascertaining, by means of variety tests, of the comparative value, for different parts of Canada, of many varieties of the different classes of forage plants. This work does not only include such varieties as are accessible to farmers through the ordinary channels of commerce at present, but also those hitherto unknown in Canada, which for some reason or other may prove of value to Canadian agriculture.

(2) The production, by breeding according to well-established scientific principles, of new varieties of forage plants superior to those now available. The aim of this work is not only to raise the quality and yielding capacity of forage crops in general but also to produce varieties especially adapted to the various climatic and soil conditions existing in different parts of the country.

(3) The gaining of a thorough knowledge of wild grasses and other plants forming part of wild hay or of natural pastures.

(4) The securing of data bearing on the possible production of seed of forage plants, particularly of field roots, in different parts of the Dominion.

VARIETY TESTS.

At the Central Experimental Farm, as well as at the branch Farms and Stations, a great number of varieties of forage plants, principally of Indian corn, turnips, mangels, carrots and sugar beets, have been tested as to their comparative value.

In all these variety tests the duplicate-plot system, which was introduced for forage plants in 1913, has proven to be of striking value, inasmuch as errors liable to result from variation in the productiveness of the soil in different parts of the experimental fields have been eliminated to a very great extent. The duplication of variety tests has, as a matter of fact, proven not only extremely useful, but even absolutely necessary for the gaining of correct data bearing on the comparative value of different varieties.

In order to secure, furthermore, as accurate a knowledge as possible of the relative value, from the food standpoint, of different varieties, those tested at the Central Experimental Farm have been judged not only by their yielding capacity but also by their chemical composition. Their real value has been calculated from tonnage and chemical composition taken together. In this way the value of the varieties, being expressed in food units, has been more accurately ascertained than previously, when the yield itself was being used as the only basis for the valuation.

BREEDING WORK.

Leguminous Forage Plants.—The breeding work with clovers and alfalfa, started in 1912, is now well under way. Two main objects, viz., increased hardiness and increased yielding capacity, furnish the basis for this work, which promises to lead to very important results.

Breeding for hardiness and increased yield in clovers and alfalfa is made possible by the fact that the forage plants mentioned do not constitute uniform "varieties." On the contrary, they are composed of a large number of distinct types differing from each other as to hardiness as well as to yielding power. These characters, furthermore, have proven to be of a hereditary character, i.e., they are transmissible from one generation to another. This being the case, the breeding of new alfalfas and clovers simply means isolation and propagation of those types of the said forage plants which possess superior characteristics in the directions mentioned.

In breeding for hardiness, the selection of hardy types is performed by Nature herself. Severe winters and adverse conditions in the early spring weed out all tender types, leaving uninjured only those which possess hardiness enabling them to survive. By propagation of the surviving individuals in an experimental field a crop is secured in which all the individuals are hardy and in which, as a consequence, winter-killing resulting from tenderness is reduced to a minimum.

That, really, by propagation of surviving individuals, hardy varieties can be produced, has already been demonstrated in several instances. As an example may be quoted the results of alfalfa experiments at the Substation at Fort Vermilion, Alta. At this Station, alfalfa has been experimented with for many years, but, unfortunately, without success. In 1913, alfalfa seed was secured from a few plants which had proven able to withstand very severe winters. This seed produced a crop, in which winter-killing was hardly perceptible.

Similar results from other parts of Canada all confirm the correctness of the idea used by the Division of Forage Plants as a basic principle in breeding for hardiness, that, namely, hardiness of alfalfa can be achieved by propagation of hardy individuals, no matter from what "variety" they originate.

In breeding for increased yield, so-called pedigree breeding is being applied, i.e., the breeding is being started from individual plants possessing superior characters. In order to secure material for this work, a number of outstanding plants were either self-fertilized or cross-fertilized in 1913. From the seed thus obtained a number of individual plants, totalling over two thousand, have been secured and transplanted in the experimental field for further study.

Breeding work similar in character to that outlined above is also well under way with red clover. The work with red clover has among other things revealed a fact which may prove of the greatest importance for those parts of Canada where a high degree of hardiness is essential for successful clover growing. It has been found that certain types of red clover are perennial in character, i.e., are able to live four years or more. Efforts are being made to produce, from such plants, a perennial and, as a consequence, perfectly hardy red clover variety.

Grasses.—A total of about three thousand timothy plants secured from self-fertilization of individuals having certain characters indicating superior forage value are being studied. The nature of the breeding work with timothy, as explained in previous reports, makes it impossible to expect results after only a few years' breeding work. The results obtained so far indicate that the object aimed at, viz., the production of uniform varieties of a superior forage value, will be materialized in due time.

Breeding work, similar to that under way with timothy, has also been started with Orchard grass, Western Rye grass, Meadow Fescue, and other grasses.

WILD GRASSES.

The herbarium material of grasses and kindred plants necessary for the correct understanding of the nature and merits of natural pastures and of hay made from wild grasses is steadily being increased. In addition to a vast collection of grasses, made principally in British Columbia, about 800 sheets of European grasses and sedges have been secured through exchange.

A great number of specially selected grass specimens have been collected for exhibition purposes. The majority, representing 175 different species, are being exhibited in the Canadian pavilion at the Panama-Pacific International Exposition, San Francisco, California.

SEED PRODUCTION.

With a view to improving old varieties of field roots by breeding, preparatory experiments were started with mangels and turnips on a small scale in 1913.

In 1914, when the conditions in the root seed producing countries of Europe threatened to make a normal supply of seed impossible, steps were taken to secure data bearing on the possibility of producing field root seed profitably in Canada. As large quantities as possible of suitable mangels and turnips were selected as seed roots for the year 1915.

POULTRY DIVISION.

GENERAL DEVELOPMENT OF THE WORK.

Since the enlargement of the Poultry Division two years ago, the work has been gradually increasing, and the demand for still greater expansion is more and more apparent. For, though so much has been done to encourage the producer, Canada, according to the Customs returns, even yet does not produce eggs sufficient for her own requirements.

Eleven of the branch Farms and Stations this year are equipped for work in poultry and practical demonstrations are being conducted thereat. On the Central Farm the stock has been more than doubled during the past year, and good beginnings have been made with turkeys, geese, and ducks.

NATURE OF THE WORK.

This Division aims to help the farmer who keeps a small flock of hens as well as the man who depends upon the flock for a livelihood, and with this end in view many of the problems that face the producer are receiving attention, and as the laboratory equipment at Ottawa is increased, research in more of these will be instituted. Among the questions that are receiving immediate attention are: Better housing, cheaper feeds, healthier stock, more suitable varieties, decrease of mortality, incubator problems, better and stronger fertility, higher average egg yield, larger eggs, better preparation for market, best methods of shipping eggs for hatching, day-old chicks and breeding stock, the production of early winter eggs, a more even distribution of what the producer has to sell, the practicability of water fowl on the farm, the prevention or cure of blackhead in turkeys, as well as a number of other common diseases to which poultry of all kinds are subject.

BUILDINGS.

The three small buildings erected at the Central plant a year ago have proven very helpful in the work. The experimental breeding house has made it possible to carry on some special mating experiments. The cockerel house has served the purpose for which it was originally intended during the winter months, and has proven to be a satisfactory brooder house for chicks in the spring and summer; the feed and storehouse has rendered this end of the work more convenient, and the basement is being utilized as an incubator cellar.

The new administration building which was expected during the year has not yet been built and, because of this, the old buildings are still retained, but it is hoped that this building will be available very soon, when laboratory space will be provided and more investigational work taken up.

THE WATER FOWL PLANT.

Upon the area of land and water which was inclosed last year for a duck pond, a small cottage for the attendant has been erected. During the year this plant was utilized for the water fowl, and breeding turkeys also were placed there quite recently.

This makes an ideal spot, especially for the water fowl, as considerable water is included inside the fence. Small yards reaching to an artificial pond have been constructed for the use of the breeding stock early in the spring before the water comes into the canal.

This addition to the Central plant provides a much-needed range and makes it possible to carry on work that has been in contemplation for some time. It also adds to its general appearance by turning wild land into a water-fowl park.

THE EQUIPMENT AT THE BRANCH FARMS.

The poultry plant at each of the branch Farms and Stations is more for the purpose of demonstration than experiment, and therefore comprises what might be considered ideal conditions for a farm poultry plant that is run on a commercial basis. Some of these Farms have their complete equipment, which includes houses of various types and sizes, sufficient in all to accommodate between three and four hundred laying hens; incubator and brooder equipment to reproduce from one-half to two-thirds of the flock each year; an administration building, the basement of which is used for an incubator cellar, the first floor for office, bed-room and feed-room, the attic for store-room.

NUMBER AND VARIETIES OF STOCK.

The stock includes ordinary fowl (hens), turkeys, geese, and ducks. The varieties as a rule are those which are considered to be more or less of a general-purpose character, and especially suitable for farm conditions. Hens, water fowl, turkeys, and guineas are bred at the Central plant, while all the branch Farms that have poultry plants keep hens, though only those specially situated have turkeys or water fowl.

The old hens, that is, those birds that have passed through their second laying season, are sold immediately after the breeding season, usually in June. The selling of these at this time gives more room on the plant for the growing chicks; it also puts on to the market poultry flesh when it is comparatively scarce and consequently high in price, and indirectly it assists the market later on in the summer and fall when, as a rule, poultry meat of all kinds is marketed.

At the Central Plant.—During the past year the stock at the Central Experimental Farm has been materially increased. On January 1, 1915, there were 849 birds, 146 of which were water fowl, turkeys, and guineas. Of the fowl, the Barred Rocks predominated, with White Leghorns second. These are followed by several pens of White Rocks and White Wyandottes and smaller lots of White, Buff, and Black Orpingtons, Black and Brown Leghorns, and Black Minorcas, besides single matings of several other varieties. In ducks there are several matings of Indian Runners, Pekins, and Cayugas, and a pen each of Aylesburys and Rouens. In geese, Toulouse, Embden, African, and Wild were represented, and the variety of turkeys was Bronze.

At the Branch Farms.—Seventy-five per cent of the hens on the branch Farms belong to the general-purpose breeds, such as Rocks, Wyandottes, etc. The remaining 25 per cent are White Leghorns, the most of which are at Agassiz, B.C., and Lethbridge, Alta., where the climate is better adapted to tender varieties, but even there it is found that the general-purpose breeds are giving better satisfaction, and as a consequence the proportion of lighter breeds will be diminished.

About 300 laying hens are kept at each of the branch Farms. As a rule, 200 of these are pullets and 100 year-old hens. The pullets are tested the first year by the trap-nest and are fed for egg production, and 100 of the best of these are kept until the following year, when from them eggs are taken in the breeding season for hatching purposes.

With this arrangement it is necessary to mature 200 selected pullets each year; this means that at least five or six hundred chicks are raised to maturity. About 50 per cent are cockerels, the best of which are retained for selling as breeders to the farmers. Of the 300 pullets, 200 are selected for the laying pens.

From one to four varieties are bred at the branch Farms, though it is not the intention to keep too many varieties but rather to eliminate those which are the least satisfactory and confine attention to the one or two which prove most practical for the locality.

MEETINGS.

The demand for speakers has been, if anything, greater than usual. Mr. Fortier has been absent 111 days during the year, has lectured at sixty-one different places and judged at eighteen shows throughout Quebec and Ontario, and the reason that he did not get to more meetings was because of his inability to leave the office. Mr. Robertson has attended a few but has been unable to be absent from the plant for any length of time, though numerous requests have come for him, especially to judge. Mr. Elford attended a number of meetings, but his work here and in connection with the branch Farms has made it impossible for him to attend very many. He made two visits to the branch Farms and Stations inspecting the poultry work, and a number of "Patriotism and Production" meetings were attended by him during the "campaign."

CORRESPONDENCE.

The correspondence of the Division is very heavy. Information in circular form assists considerably, but the number of questions that have to be answered individually seems to be growing.

THE TOBACCO DIVISION.

The scope of the Tobacco Division was enlarged at the beginning of the season of 1914-15, by the appointment of two crop inspectors, one for the province of Quebec, the other for Ontario.

The season of 1914, though not altogether favourable for tobacco growing, allowed of the harvesting of an average crop, although slightly later than in a normal year; in Quebec, the establishment of the plantations was considerably retarded by a prolonged drought. In general, however, the crop ripened sufficiently early, except in those plantations harvested in September, the early part of the month being marked by continued rain.

CENTRAL EXPERIMENTAL FARM.

Plantation.—Among the varieties lately tested is a large number of types of the small-leaved Canadian tobaccos and also some large-leaved pipe tobaccos such as "Gold Leaf" and "Maryland," etc. In spite of a somewhat cool season, all these tobaccos were harvested well before the first frost.

An abundant supply of tobacco seed was obtained, which was distributed in part during the winter of 1914-15.

The drying process was carried out without difficulty or delay.

Fermentation.—The tobaccos of the 1914 crop were tested at Farnham but, during the summer, an experiment in betuning with part of the 1913 crop, was carried on at Ottawa. The results were interesting, especially with a view to the preservation of tobacco from injury by mould.

STATION AT ST. JACQUES, QUE.

The seed treated with formalin grew well. The establishment of the plantation, however, was hindered by drought, and the crop harvested was a little below the average.

A good selection of Yamaska and of Big Ohio × Sumatra was made, notwithstanding, and some hybridizing was done. The work of drying in the open field, which had been successfully carried out in 1913, was made easier by the use of stronger and more suitable material for the drying frames. The drying process was completed in good time, with the aid of charcoal stoves.

STATION AT FARNHAM, QUE.

Although there was an abundant supply of plants, it was impossible to plant the whole area intended for tobacco. About three arpents were cut off.

The drought of early June was accompanied by such violent winds that, in spite of abundant watering at planting time, the plants established themselves with great difficulty, and certain parts had to be entirely replanted several times. Watering had to be continued, a tedious and costly process and one beyond the means of the average grower.

The harvest was a normal one, and ripening took place in good time although the tobaccos did not have the characteristics of a crop ripened under more favourable conditions.

The placing of the tobacco on the racks, and its drying in the open field without letting the tobacco lie on the ground, was carried on on a larger scale than at St. Jacques.

The drying racks were covered at night and on rainy days. By this means the yellowing of the tobacco was effected more rapidly and without risks. This with the use of charcoal stoves in the curing shed, reduced the drying period materially.

Systematic experiment with chemical fertilizers has tended to verify the formula already recommended to the tobacco growers of Quebec.

STATION AT HARROW, ONT.

The plantations were made during a showery and rather cool time. This aided the plants in establishing themselves, but was also favourable to the cutworms, which were especially troublesome.

The soil in the seed-beds was treated with steam. The results were more marked and more favourable than were those obtained by using formalin.

Among the varieties of tobacco grown at Harrow in 1914 were several types of burley, recently obtained from Kentucky. Many of these were interesting and some proved superior to the type of "Improved White Burley" grown at Harrow for some five years, and coming originally from the Experiment Station at Lexington, Ky.

Among the yellow, flue-cured tobaccos, the "Yellow Prior" and "White Stem Orinoco" are noted for their adaptability to the climate of Ontario, and furnish a product of good colour. Some of the Italian varieties give a good proportion of clear yellow leaves, but their texture is somewhat weak.

As at Farnham, systematic experiment with chemical fertilizers is being carried on at Harrow. Although some deductions may be drawn by the reader from the results obtained in 1914, nothing conclusive can be stated from only one year's work.

The same system of harvesting practised at St. Jacques and at Farnham was introduced at Harrow in 1914. The results will be more easily judged in an autumn more favourable for the drying process, this period in 1914 being marked by a prolonged spell of damp weather which caused mould to appear in some curing sheds.

INSPECTION.

This work was carried on mainly in eastern Ontario, the inspector for Quebec having been called to the French colours in August. The Ontario inspector besides his special work, supervised the experiments carried on at Walkerville in the use of acid fertilizers to prevent the damage done by tobacco root rot.

EXPERIMENTAL STATION FOR PRINCE EDWARD ISLAND, CHARLOTTETOWN, P.E.I.

THE SEASON.

The snowfall during the winter of 1913-14 was heavy and gave good protection to shrubs and plants during the very low temperatures of February. The weather remained very backward throughout the whole month of April, and an ice storm occurred on April 21 that broke many shade and fruit trees. Sleighs were in use on the roads after the storm on May 2, but the cold dull weather cleared up after another heavy snowfall on May 11, and the weather for the remainder of the month was favourable for work and plant growth. Seeding began May 18 and became general on the 22nd, about one week later than usual. The trees appeared green May 28. During June, rain occurred on seventeen days, and vegetation remained backward owing to the cold nights, the excessive moisture, and the absence of any really hot days. Seeding was completed by June 20. The first part of July was cool. The hay crop thickened up splendidly, and cutting began on July 15. The crop was heavy, and less than one-half had been saved at the close of the month owing to unfavourable weather. The crops grew well during the favourable weather of August. The second week was hot, being splendid for haymaking, which was completed about the middle of the month. The first grain harvested at this Station was Daubeney oats, which were cut on August 20. Harvesting became general about September 1. During the first and fourth weeks of September the hottest weather of the season occurred. The greatest harvest for a number of years was almost all saved during this month in good condition. October and November were exceedingly fine, fall ploughing being delayed owing to lack of moisture in the soil. Fall tillage operations, however, were well completed before winter set in. December came in so mild that ploughing was continued up to the 5th. Winter began in earnest on the 22nd, with heavy gales and snow which were followed by unusually low temperatures at Christmas, the thermometer dropping to —10·1° F. on three different days, and the winter ice-breaking steamers were obliged to go on the Georgetown-Pictou route on December 24. The balance of the winter was very mild, with the exception of one cold week about the first of February. Carriages were used more than sleighs during each of the winter months.

METEOROLOGICAL RECORDS.

Months.	Temperature Fahr.					Precipitation.					Bright Sunshine.
	Maximum.		Minimum.		Mean.	Rainfall.		Snowfall.		Total.	
	Date.	Deg.	Date.	Deg.	Deg	Days	Ins.	Days	Ins.	Ins.	Hours.
1914.											
April	28	56	3	8	32·6	6	1·33	6	24·5	3·78	194·9
May	21	76	1	26	48·548	8	1·2	2	8·5	2·05	191·4
June	24	79	3	34·5	54·741	17	5·32	....	.....	5·32	247·7
July	17	82	2	37	63·201	8	2·84			2·84	277·9
August	11	84	25	46	64·	15	2·43		..	2·43	247·9
September	23	87	29	35	59·016	12	5·02		.	5·02	191·
October	5	72	7	26	47·823	16	3·57			3·57	135·9
November	2	59	19	11	35·284	9	2·29	4	3·6	2·65	96·5
December	1	50	25	–10	22·709	4	1·1	7	9·2	2·02	99·9
1915											
January	20	48	31	–14	21·58	6	2·62	11	27·	5·32	72·4
February	7	49	2	–13	22·624	10	1·54	3	8·	2·34	94·6
March	26	45	27	10	25·774			18	23·5	2·35	86·4
Total annual	......	......	......	......	......	111	29·26	51	104·3	39·69	1,936·5

BUILDINGS.

The old coach-house was remodeled, with a veranda built across the south end and along the east side. This and a comfortable cloak and toilet room for ladies who come to the Station on picnic excursions were much needed for our visitors. A stove, sink, and drip-board, with plumbing connections, were placed in a lunch room for the men, and were found very convenient in connection with serving hot tea and coffee to the Farmers' Institute excursions.

Two colony houses and a few small rearing-houses were added to the equipment of the poultry yards. A bee supply house was fitted up near the apiary.

UNDERDRAINAGE.

The work in underdrainage was begun as early in the spring as the frost would permit, and the greater part of the wet or late areas of land on the farm were drained before planting. The balance of this work was completed in the early autumn. Some 6¼ miles of tile were laid during the season, draining about 28 acres.

HORSES.

The six horses at the Station are in good condition for the spring work. A team of pure-bred Clydesdale mares were purchased in the spring of 1914. One of the mares, "Darling of Taunton," No. 18507, is now carrying a foal by "Baron Kelvin."

DAIRY COW.

The milk cow, "Plum," calved in June and, after recovering from an attack of milk fever, produced 6,646 pounds of milk in ten months. Her profits over the year's feeding expenses were $63.09. She was milking well at the close of the fiscal year, when she was sold to make room for two pure-bred Ayrshire cows, "Island Queen of Spruce Row" and "Lady Petunia of Spruce Row." These promising young cows are the beginning of an Ayrshire herd for this Station.

STEERS.

The steer-feeding experiments were continued with three pens of four steers each. Good feeders of a beef type are not plentiful in this province, and the steers fed had more or less of dairy blood in them. The following prices, live weight, were obtained at auction, according to quality: four good steers, 7¾ cents per pound; four medium steers, average price 7½ cents; four light dairy steers averaged 6⅞ cents per pound. The cattle were fed at a good profit. Details will be found in the Animal Husbandry section of the report.

SHEEP.

The small Leicester flock of sheep gave a good crop of lambs in the spring of 1914. This flock was found to be badly infested with internal parasites. Treatment for these is still being continued.

LAMBS.

The lamb-fattening experiment with different roughages was continued, and a good margin of profit realized from the better rations.

POULTRY AND BEES.

These two lines of work were under the care of one man. The poultry plant was enlarged and the flocks of Barred Plymouth Rocks and White Leghorns were increased. Experimental work with cotton-front colony houses and straw-loft houses showed the cotton front type of house to be satisfactory. The houses with straw lofts were drier under all weather conditions than those without.

The bees produced a fair amount of honey, and the five colonies increased to nine. An experiment with out-door *versus* cellar wintering was tried, four colonies being left in a sheltered location outside. A spring examination revealed two colonies dead in the bee cellar and also two dead in the outside wintering case, although all had an abundant store of honey.

CEREALS.

The season was favourable, and large crops of cereals were harvested in good condition. Co-operative work with three varieties of oats was continued with a number of farmers. At the end of the third season's work, Banner oats maintains a good lead over the other varieties tested.

FARMERS' PICNICS, VISITORS.

The Farmers' Institute picnics were increasingly popular, and many farmers visited the Station in this way during the season, when they could see for themselves what was being done in experimental and demonstration work. Educational addresses and agricultural lectures,were given at these picnics by the leading men of the province, and were greatly appreciated by the excursionists. The number of visitors recorded during the year was 5,296.

EXHIBITIONS.

With the assistance rendered from Ottawa, an exceedingly fine exhibit was put up in the most central part of the exhibition building at Charlottetown during the Provincial Exhibition, September 22 to September 25, 1914. This exhibit attracted much attention and received very favourable comment. An interesting display of flowers, fruit and honey was made at the second annual flower show held in August, 1914. The superintendent judged at several of the county exhibitions.

CONVENTIONS AND ASSOCIATIONS.

The superintendent was present and took part in the discussions at the various conventions and association meetings in the province, and in connection with the Maritime Winter Fair at Amherst, N.S. He gave an address on the "Improvement of Seed Grain in Prince Edward Island" at a meeting of the Canadian Seed Growers' Association for Nova Scotia during the short course at Truro, N. S.

SHORT COURSES AND AGRICULTURAL MEETINGS

The superintendent gave instruction in field husbandry at the Prince Edward Island short course in agriculture held at Charlottetown during January, 1915, and in floriculture at a number of the short courses in household science held during January and February, 1915. Instruction was also given in field husbandry at the agricultural short course held in Shubenacadie, N.S., February 8, 9, 10, 1915.

Farmer's Institute and Women's Institute meetings were addressed at various times in different parts of the province, and a series of meetings were addressed in the Musquodoboit and Stewiacke valleys in Nova Scotia during February, and another series of meetings were held along the Canada Eastern railway at Doaktown, Blackville, and Millerton in New Brunswick during March, 1915.

SALE OF SEED GRAIN AND DISTRIBUTION OF SEED POTATOES.

Ten lots of registered Banner oats of the second generation, one lot of registered Red Fife wheat, and three lots of Manchurian barley were sold to farmers. Twenty samples of potatoes were sent out in April, 1914.

A considerable quantity of first generation registered Banner oats and Marquis wheat has been sealed by the inspector, and will be sold to prospective members of the Canadian Seed Grain Growers' association, in the spring of 1915.

EXPERIMENTAL FARM, NAPPAN, N.S.

SEASONAL NOTES.

During the winter of 1913-14, a most satisfactory covering of snow remained on the ground, from the 25th of December to the second week in March. During the latter part of March and the first of April, however, heavy thawing and freezing occurred; this helped reduce the hay crop since practically all the clover was winter-killed. April was unsettled throughout. May gave promise of being a favourable month, but a change took place toward the latter part with the result that June came in with very unseasonable weather, light flurries of snow, and low temperatures.

Notwithstanding this, however, all grain was sown during the occasional fine days of the last week in May and the first week in June. The weather continued cool during the remaining part of the month, but germination took place much more rapidly this year than last. The grain was only seven days in showing above the ground, whereas last season it was from eighteen to twenty. Neither corn nor grain made much growth until the latter part of July, then both came on very rapidly. July and August were undoubtedly the best growing months, but fruits and vegetables did not do very well. Very favourable conditions maintained until the latter part of September, from which time dull, cold weather prevailed until the end of the season, with an occasional fine day. Up to October 16, weather conditions were most favourable for harvesting, but a cold spell was experienced after that date, causing some delay. All fruit was harvested in good condition.

Quite heavy frosts were recorded during the early part of October. Only fair progress could be made in the fall ploughing, since much of the land was too wet. The total precipitation for the month was 2·46 inches. Cold, wet weather prevailed throughout the first three weeks in November. The remaining part was fine and mild. The total precipitation for this month was 2·97 inches. The weather was rather unsettled during December. The first two weeks were fairly fine, with occasional snow flurries. Fairly heavy showers, with low temperatures, characterized the latter part.

It may be said that it was a very open fall with considerable rainfall followed by a very open winter with much mild weather during the latter part.

SOME WEATHER OBSERVATIONS taken at Nappan Experimental Farm, 1914-15.

Month.	Temperature, Fahr.			Precipitation.			Total Sunshine.
	Highest.	Lowest.	Mean.	Rainfall.	Snowfall.	Total.	
	°	°	°	Inches.	Inches.	Inches.	Hours.
1914							
April	61	8	33·94	1·89	18·00	3·69	172·05
May	79	24	49·03	·75	.....	·75	147·10
June	77	26	54·19	4·23	.....	4·23	243·50
July	84	35	61·54	3·61	.....	3·61	255·00
August	84	40	62·84	2·95	.....	2·95	210·80
September	84	33	56·25	3·05	.....	3·05	161·75
October	69	20	47·02	2·46	.....	2·46	139·35
November	60	7	33·59	2·97	.....	2·97	85·75
December	51	−17	20·22	1·46	.....	1·46	110·15
1915							
January	53	−10	21·61	2·69	4·00	3·09	75·10
February	54	−14	23·64	1·01	3·00	1·31	94·70
March	48	9	26·35	....	12·00	1·20	75·00
Total for year	....	....	....	27·07	37·00	30·77	1770·25

BUILDINGS.

The herdsman's house was moved up on the hill just east of the main barn, a much more suitable location than the old one. This house was too small and in poor shape, hence it was repaired throughout and an addition built on to the east side, 18 by 22 feet, and fitted up with bathroom and w.c. complete.

The implement shed, located south of the horse stable, was repaired and moved back some 25 feet and east 60 feet. The carriage shed, which stood just east of the Superintendent's house, was repaired and moved down and joined on to the west end of the implement shed. A number of internal changes were made in this carriage shed.

The ice-house, which formerly stood just north of the carriage house, was moved to the corner of the field east of the main barns.

One incubator and feed house, 18 by 26 feet, was erected, also one permanent poultry house 16 by 32 feet, and one brooder house 12 by 14 feet. For further details of new buildings see poultry report for Experimental Farm, Nappan.

ELECTRIC LIGHT SYSTEM.

A complete electric light system has been installed during the past season, with an all-day service.

FENCING.

Some three acres were fenced in for poultry runs. Turned cedar posts set at a distance of one rod apart, were used, with electric weld poultry wire for the main run. Smaller runs for breeding stock were built in front of the houses, but Page poultry wire was used instead of electric weld, which will give a test as to which will be more suitable. All fences were gone over in the spring and given general repairs.

CLEARING LAND.

Some 16 acres of land were cleared and broken during the summer at a cost of $24.20 per acre. The plough called the "Manitoba Brush Breaker" was used and proved to be an excellent plough for the work, four horses being used on it.

ROADMAKING.

The split-log drag was put over the main road, east and west of this Farm, several times during the early part of the season. The road machine was also used on a short section of it. In this way it is hoped to encourage the up-keep of the public roads. All the main drive roads on the Farm were gone over several times and dressed up, thus preventing the growth of weeds.

LIVE STOCK.

A most successful year can be reported from this Farm in all experimental work with live stock.

The experiment of grading up a bunch of common dairy cows of this district, by the use of pure-bred sires, started in 1911, was continued. The results obtained up to date are most encouraging, as a large percentage of the progeny are giving every evidence of being superior to their dams. (See table of production under division of dairying.)

A similar beef feeding experiment to that conducted the two previous years was again carried on, and most satisfactory results obtained. Twenty-four steers were divided into two main groups, according to fleshing and type, into good butchers and good stockers. These were subdivided into heavy-fed and light-fed groups, each of these in turn was further subdivided into lots fed different rations. The profit per steer ranged from $12 on the smaller to $23 on the larger ones.

The experiment in feeding lambs was of the same nature as that for 1913-14, but instead of clover hay, broadleaf was used. Fifty grade wethers were purchased for this test. These were divided into four lots and fed on different rations. Lots 1 and 2 received timothy hay and meal. Lots 3 and 4 received half broadleaf and half timothy hay and meal. Lots 2 and 4 received roots in addition to the meal ration. The profits per lamb were as follows: Lot 1, $0.64; lot 2, $0.63; lot 3, $0.36; and lot 4, $0.29; showing the superiority of timothy hay over broadleaf hay in feeding lambs.

A very successful year can be reported in breeding swine. Some thirty-three pure-bred pigs were sold during the season, and three young sows kept to increase the herd.

The pure-bred Shropshire flock started in 1912, has given very satisfactory returns during the winter of 1914-15. The yield was nine lusty lambs from eight ewes.

CEREALS, ETC.

Eleven varieties of wheat were tested and ranged in yield from 26 to 46 bushels per acre; twelve varieties of oats ran from 81 to 100 bushels per acre; six varieties of two-row barley ranged from 30 to 60 bushels per acre; six varieties of six-row barley ranged from 27 to 57 bushels per acre.

The buckwheat plots did not do as well as they should have, being grown between two rows of large apple trees. Five varieties were sown, with yields from 30 to 38 bushels.

Peas were badly infected with blight, hence the crop was not worth reporting.

Nine varieties of ensilage corn were sown, and ranged in yield from 7 to 18 tons per acre.

Sugar beets yielded very satisfactorily, four varieties being tested, giving a yield of from 9 tons 200 pounds to 9 tons 1,200 pounds per acre; thirteen varieties of turnips gave yields from 20 to 27 tons per acre; eleven sorts of mangels from 9 to 20 tons per acre. The six varieties of carrots gave from 11 to 19 tons per acre.

Some sixteen varieties of potatoes grew very well, nothwithstanding the fact that the soil was not as friable as it might have been. The yields were from 135 bushels 42 pounds to 333 bushels 18 pounds per acre.

The quality of the large fruit was such as to compensate for the low yield; more especially is this true of the apples. The commercial orchard made very satisfactory growth during the year. Careful data are being kept of the returns of this orchard in order to demonstrate the actual cost of bringing it into profitable bearing.

Small fruits gave very meagre returns. The location of this plantation is undesirable, and is now being changed. Strawberries were injured to some extent by the severe freezing and thawing during the winter of 1913-14, consequently winter-killing was much in evidence.

An experiment with spray mixtures was carried on as follows: Lime-sulphur and Black Leaf 40 *versus* lime-sulphur and lead arsenate, also lime-sulphur *versus* Bordeaux mixture. The best results were obtained from the use of lime-sulphur and Black Leaf 40, also from lime-sulphur over Bordeaux. (For further detail see horticultural report.)

All flowers at this Farm did exceptionally well, considering the late spring and cool summer.

An exhibit of farm produce was made at Shubenacadie on September 23 to 25, Kentville, October 6, 7, 8, and 9; and at the Maritime Winter Fair from December 7 to 10.

MEETINGS ATTENDED AND ADDRESSES GIVEN.

During the year the Superintendent gave addresses at a series of meetings on "Patriotism and Production," held at Port Elgin, N.B., Sackville, N.B., Rexton, N.B., Petitcodiac, N.B., Doaktown, N.B., Millerton, N.B. and Blackville, N.B.; attended the Farmers' and Dairymen's convention at Fredericton, and gave an address on beef cattle; judged the school gardens for Salem, West Leicester, East Leicester, Mansfield, and Little River schools, giving them a talk on school gardens; also attended the conference of officials and superintendents held at Ottawa from January 14 to 20, 1915.

There were six picnics held at this Farm during the summer months. The number of visitors recorded during the year was 2,652.

EXPERIMENTAL STATION, KENTVILLE, N.S.

THE SEASON.

The temperature during the latter part of April and the first part of May was fairly uniform, with no warm periods to force growth, with the result that plants made little growth until after the middle of May. The mean average temperature for the period from the middle of April to May 1 was 41·2 degrees, and for the following two weeks ending May 15, 43·4 degrees. The mean average from May 15 to June 1 was 57·5 degrees. The spring was a normal one in that, as a general thing, good growing weather does not start until about the middle of May. There were 9, 4, 3, 2 and 1 degrees of frost on the 1st, 2nd, 15th, 16th, and 17th of May, respectively. On the 4th of June there was a severe frost in parts of the valley which did much damage to fruit trees in bloom. Frost was noticeable at this time at the Station; the thermometer registered just 32 degrees, but it was not heavy enough to do damage.

The first part of May was dull, with no good drying winds, and as a result spring work was late. The first seeding was done May 20. Crops generally came on rapidly during the latter part of May and June, except corn which, owing to a cool June, made slow growth. In some places early seeded corn just through the ground was killed by the June 4 frost. The rainfall during June was 4·2 inches, but this was followed by a dry July, for which month only 1·45 inches fell. Crops did not suffer as much as might have been expected, due largely to an absence of prolonged hot, drying winds. August and September were, on the whole, favourable months, and corn and roots made fair growth. The fruit crop was not heavy, especially in sections hit by the June frost. The fruit as a general thing was well sprayed and packed out good in quality. The first fall frost of 5 degrees which damaged corn not cut, came October 1. Weather was favourable for the fruit crop harvest and it was completed before heavy fall frosts.

November was a good month for finishing up fall work, and ploughing was possible, except for a short period, during the whole month. There was little bright sunshine during the first half of the month; the total rainfall, however, was light and in some cases a shortage of water in wells was reported. The first week in December was open, and ploughing was possible on the 5th. There was a fall of snow on the 23rd of 8·02 inches, which made good sleighing for Christmas. The thermometer registered 6, 4 and 5 degrees below zero on the 25th, 26th and 27th, respectively.

January was unusually mild, with the lowest 1, 4, and 4 degrees below zero on the 5th, 30th, and 31st, respectively. There were three heavy thaws during the month, and rain fell on twelve days. Much damage was done to the fields from washing, and in many cases deep gullies were cut out by the water. There was good sleighing only from the 21st to the 23rd, and although 21·12 inches of snow fell, this was followed by mild weather which soon melted it. February was also mild after the first week, and there was little snow except from the 1st to the 6th to make sleighing, and as a result, lumbering and getting out wood were seriously hampered. There was little rain during the month, and although the temperatures for Feb. 2, 3, 4 and 5, were 9, 4, 2, 1 degrees below zero, Fahr., after that time the temperature did not go below 10 degrees above zero, which was very unusual. March was an even month with not enough snow at any one time for sleighing, and no rain fell during the month, with the result that the usual flooding from spring rains did not occur.

METEOROLOGICAL RECORDS.

WEATHER OBSERVATIONS taken at Experimental Station, Kentville, for 1914.

MONTH.	TEMPERATURE F.			PRECIPITATION.			Total Sunshine.
	Mean.	Highest.	Lowest.	Rainfall.	Snowfall.	Total.	
1914.	°	°	°	Inches.	inches.	inches.	hours.
April	36·8	72	16	1.48	8.5	2.33	196.
May	50·72	84	23	1.26	2.0	1.46	189.6
June	56·2	82	32	4.2	....	4.2	250.3
July	62·88	85	39	1.45	....	1.45	238.9
August	63·	87	40	2.58	....	2.58	211.1
September	57·6	88	35	3.65	....	3.65	173.8
October	49·5	70	25	1.90	....	1.90	158.2
November	36·4	65	5	3.09	1.0	3.19	109.7
December	22·89	56	6	1.57	10.18	2.58	85·1
1915							
January	22·83	56	4	2.64	21.12	4.75	73·4
February	25·61	54	9	0.63	6.25	1.25	99·6
March	26·81	50	9	....	9.5	0.95	103·1
Total	....	....	....	24.45	68.55	30.29	1888·6

CROPS GROWN.

Seventeen acres of oats sown on newly cleared land produced an average of 47 bushels per acre. The total area in oats, including the different fertilizer plots, was 31½ acres. Twenty-two acres of this was seeded to clover and timothy, which started well and gives promise of a good crop for next year. Ten acres were planted to potatoes, of which 5 acres was poor land without fertilizer to find out the uniformity of the land for future experimental work. The crop on this was light and small and most of it was fed to the stock. Three acres were also in fertilizer tests and averaged 64½ bushels of oats per acre. A block of one-half acre of Delaware yielded 142 bushels per acre, and one-half acre Empire State, 137 bushels potatoes per acre. Four acres of turnips sown early in June yielded 680 bushels per acre, and 1 acre seeded July 4 yielded 490 bushels per acre. The total turnip crop was 3,013 bushels. Ten acres of corn yielded an average of 12 tons per acre, 120 tons of ensilage corn fairly well matured was put into the silo. The area in hay was very limited, and 16½ tons only were secured. One acre of winter rye was cut for green feed for stock. An acre was seeded to alfalfa, which has made a fair start.

FRUITS PLANTED.

Additional plantings have been made of orchard fruits, and the area now in orchard is 42 acres, comprising 1,068 apple, 259 pear, 175 cherry, 398 plum, 102 peach, and 25 quince and apricot trees, or a total of 2,027 trees. Four thousand strawberry plants were set, also a number of new sorts for experimental purposes. The bush and cane fruits have made good growth and should give good crops next season.

LAWNS, SHRUBS AND TREES.

The lawns suffered very much during the summer from lack of rain. The land is light and poor, and will have to be fertilized to get a good lawn. The shrubs and ornamental trees have made a fair start.

FENCING.

Fifty-four hundred feet of fence were erected to inclose the ravine in order to use it for pasturage. Parts of this were difficult to construct, it being necessary to clear and stump the area through which the fence was built. Cedar posts were set one rod apart, and plain wire was used.

DRAINAGE.

Two thousand feet of underdrains were put in on an area to be used for permanent fertilizer plots.

ROADS.

In order to avoid fencing along the main road to the rear of the farm, a road for stock was cleared along the west edge of the ravine. An area 30 feet wide and 2,850 long was cut, stumped and ploughed.

CLEARING LAND.

Twenty acres of land were cleared of stumps and brought under the plough. This area, for the most part, had been in hardwood, and many of the stumps were large and much expense was involved in getting the land in condition for crops. It will be necessary to use 15 acres of this land for corn next year. A 7-acre block cost $226.79 per acre to clear, and the balance cost $256.89 per acre.

OVERFLOW WATER.

The fields at the front of the Farm incline abruptly toward the north and, with a heavy rain, serious flooding and washing of the lower areas result. Stone drains constructed to carry the surplus water away were washed out, and much damage done to the main drive road. Catch basins with large pipe to carry the water were filled with sand, making it necessary to dig the pipe up to clean out the obstruction. On the whole, the taking care of the surplus water during heavy fall or spring rains is a rather difficult problem.

EXPERIMENTAL ORCHARDS.

Experimental orchard work at Falmouth, Hants county, N.S., Berwick, Kings county, N.S., and Bridgetown, Annapolis county, N.S., was continued this season. Much information of value to the growers is being obtained in these orchards. The work at Falmouth and Berwick was conducted by Mr. Arthur Kelsall, and at Bridgetown by Mr. M. P. Pike.

FERTILIZER EXPERIMENTS.

A number of fertilizer experiments have been conducted during the year, and information of value to those who use commercial fertilizers has been secured.

CEREAL PLOTS.

The area suitable for cereal plots is limited, and cereal work was confined to two varieties each of oats, barley, and wheat in plots of one-half acre each.

ROOTS AND CORN.

Tests were conducted with some of the better known varieties of roots and corn. Longfellow seems to be the most suitable silage corn.

VEGETABLES.

Tests were conducted with the leading varieties of vegetables.

FLOWERING PLANTS.

The grounds were made particularly attractive by a free use of annual and perennial flowering plants, which were much enjoyed by visitors. The sweet peas were exceptionally good.

APIARY.

The apiary was increased somewhat during the season. The year was not favourable for a large crop of honey, and only a small quantity was extracted.

POULTRY.

The poultry work has been extended and a new house erected for 100 hens; this, in addition to the seven colony houses, gives housing room for 250 laying hens. A brooder house has also been built. A house 18 by 25 feet formerly used for poultry has been changed into a service and incubator building. A cellar was built and the building moved on to it. The incubation last year was carried on in the root cellar and the results were not altogether satisfactory.

LIVE STOCK.

Three pairs of working horses and one driver have been in use, and in addition three pairs of working oxen have been employed in breaking up land, for which work they are much better suited than horses. The registered Shorthorn stock consists of seven milch cows, four yearling heifers, three heifer calves, five bull calves, and one herd bull, making a total of twenty head. One Shorthorn bull was sold during the year. Thirty-two head of steers were fed during the winter; these were a little light for profitable feeding, and the gains on them were not great. The most of the feeds consumed by the stock has to be bought and, owing to the high price of hay and meals the margin was small.

MEETINGS ATTENDED.

Agricultural meetings were addressed at: Amherst, N.S.; Truro, N.S.; Hopewell Hill, N.B.; Hillsboro, N.B.; Salisbury, N.B.; Woodville, N.S.; Falmouth, N.S.; Mt. Denson, N.S.; Gaspereaux, N.S.; Aylesford, N.S.; Somerset, N.S.; Sussex, N.B.; Hampton, N.B.; Rexton, N.B.; Sackville, N.B.; Port Elgin, N.B.; Kentville, N.S.; Fredericton, N.B.; Grand Pré, N.S.

The meetings of the Maine State Pomological Society were attended and addresses given. The Charlottetown, P.E.I. floral show was attended in the capacity of judge, and a meeting addressed there.

BUILDINGS CONSTRUCTED.

In addition to the poultry buildings mentioned above, an implement and tool building was erected. This building is 96 feet long and 30 feet wide, with 12-foot posts and a store-room above. A steer barn with a capacity of twenty-four head, was also erected with silo and root-house attached. This building is 50 by 22 feet, with wing 12 by 12 feet for feed room and root cellar.

EXHIBITIONS.

An exhibit was put up of produce grown at Kentville, at Shubenacadie, Hants County, N.S., and Kentville, N.S. At the Kentville exhibition, in addition to the general exhibit, a display was made of the vegetables grown at this Station, and also of fruit from the experimental orchard plots illustrating the importance of different sprays.

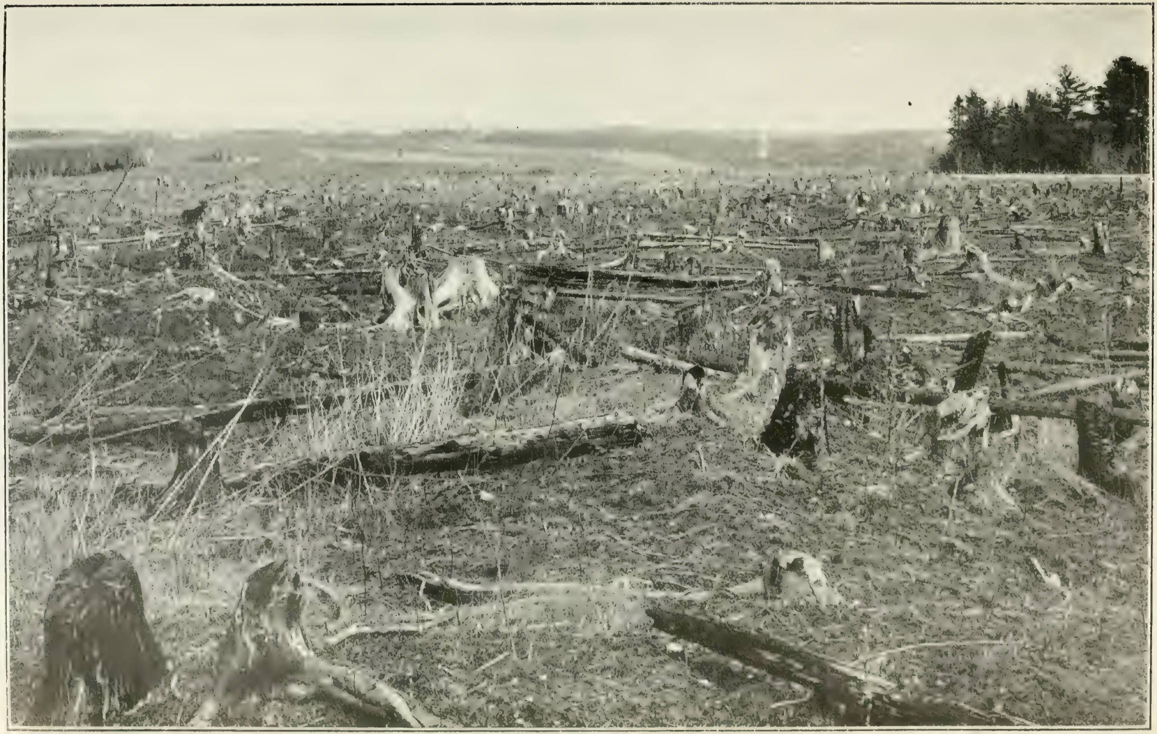
ASSISTANTS WHO HAVE JOINED THE FORCES FOR ACTIVE SERVICE.

The station at Kentville has lost the services of Mr. J. M. Robinson, B.S.A., assistant to the Superintendent, who gave up his work in September and joined the 2nd contingent for overseas service. Mr. James Gallagher, who was gardener at the station, also at the same time joined the 2nd contingent. Mr. C. Eric Boulden, who formerly had charge of the poultry, Mr. Arthur Kelsall, who had charge of experimental orchard work, and Mr. John Brown, who was employed in horticultural work, have joined later contingents. It is needless to say that these men have been missed in carrying on the work of the Kentville Station, where they have each given highly satisfactory service.

EXPERIMENTAL STATION, FREDERICTON, N.B.

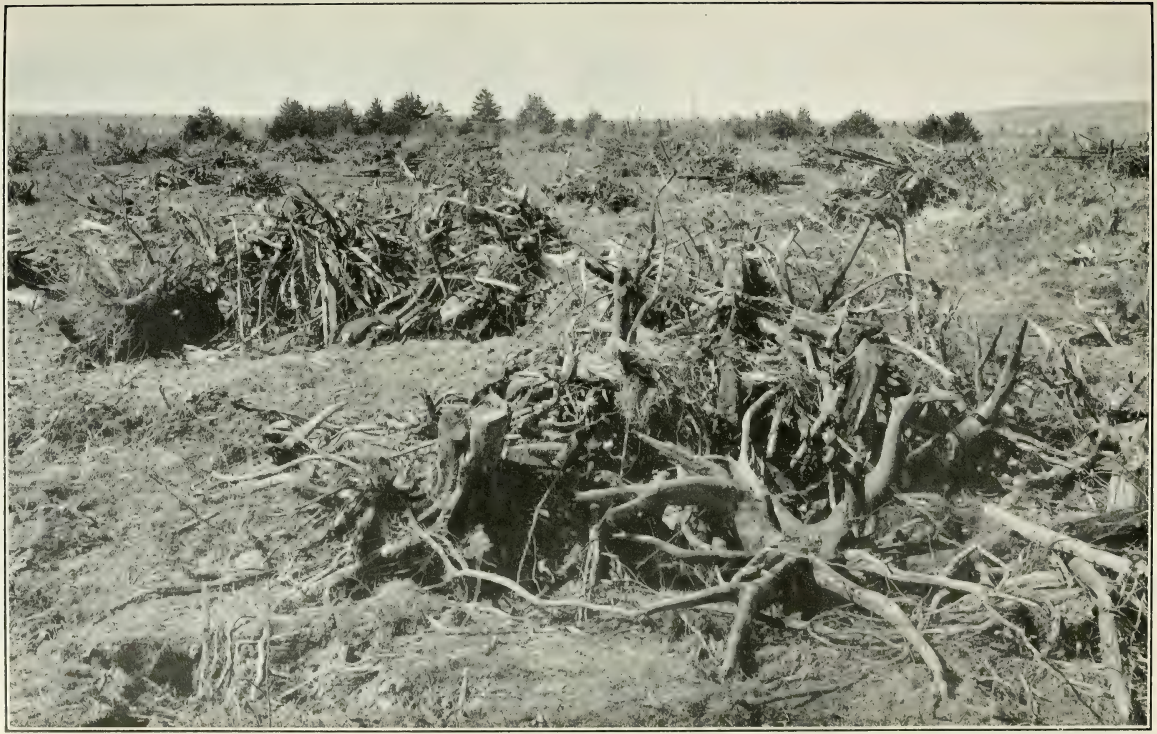
WEATHER CONDITIONS.

The winter was colder than the average, with spells of intense cold almost unprecedented. The average mean temperature for January, February, and March was 15·5 degrees against an average for the last forty years for these months of 18 degrees. There was, however, beginning December 24, a nice even blanket of snow, and frost did not penetrate as deeply as in more open winters. The snowfall was not above the average on the whole, and covered the ground till April 10. April was a cold, backward month with a below-zero record of 3·5 degrees on the 5th; cold high winds were



Field ready for Stumping, Kentville, N.S., May 1915.

PLATE IV



Stumps and brush piled for burning. Kentville, N.S., 1915.

frequent, and the precipitation, 4·54 inches, was nearly twice the average for the month. May continued cold and windy, with a minimum record on the 1st of 24 degrees, and frost on May 2, 5, 7, 8, 12, 13, and 29; there were, however, some warm days, since the thermometer reached 89 degrees on the 26th. There was only one-third of the normal precipitation in May, and conditions were most favourable for cultivation. Vegetation was very backward, and cold weather continued through June and up till July 22, when 44 degrees were recorded. All crops consequently made slow growth till almost August 1, and at that date such crops as corn and tomatoes were particularly unpromising. The precipitation, though not quite up to the average, was ample for the Station land and for most soils in the province, and when continued warm weather came in August and September, growth was most satisfactory, and crops eventually were very good. The average mean temperature for August, September, and October was 3 degrees higher than the average temperature for the last forty years. Harvest weather was ideal. Hay and grain were housed in splendid condition, and fine weather continued into November, so that root crops as well as others were taken from the fields in the best possible condition.

Record of Temperature, Precipitation and Sunshine at Fredericton for the year 1914.

Months.	Temperatures.		Mean.	Precipitation.	Hours of Bright Sunshine.
	Highest.	Lowest.			
1914	°	°	°	Inches.	
April	64	-3·5	33·6	4·54	200·9
May	89·5	24	54·9	1·095	189
June	88·5	28	58·2	4·34	262
July	88·5	40	65·2	2·595	260·5
August	85	39·5	64·8	3·73	205
September	89·5	30	59	2·78	186·8
October	77·5	12	47·7	2·775	129·71
November	57	3	30·58	2·75	98·4
December	47	-22·5	17·19	2·03	133·45
1915					
January	50·5	-28	18·83	2·71	85·8
February	46·5	-20·5	21·75	2·47	107·9
March	47·5	6·5	27·9	·62	121·35
Total	....	....	....	32·435	1980·81

BUILDINGS.

During the year a double cottage, two permanent poultry houses of 100-bird capacity each, and a poultry administration building with incubator basement and a brooder house were erected, and repairs made to one of the houses on the Station. As the well drilled in 1913 did not give sufficient flow for all purposes, a new well was started; unfortunately the well-boring machinery caught fire and was destroyed, burning also the coal shed and pumping station immediately adjacent. This accident necessitated a new engine for the old well, and the erection of a temporary shelter. At a depth of 900 feet no satisfactory flow of water has been found in the new well.

FENCING AND DRAINING.

Three and two-third miles of woven wire fence were erected, and preparation made for a continuation of this work.

A crew was kept steadily at work digging ditches and laying tiles. Approximately 23,000 tiles were laid, of which three-fourths were made of concrete. These are being compared with clay tile. So far as ease of handling and loss from breakage are concerned, they have thus far been more satisfactory. The drains laid in 1913 have given great satisfaction, permitting the working of the land three weeks earlier than in the years before the drainage was done.

CLEARING LAND.

Approximately 63 acres was stumped and ploughed during the season. Four and three-quarters acres of this was sown in oats, 2 acres of it planted in orchard, and 7 acres sown to buckwheat. The balance was ploughed after the seeding season, and will be put in crop in 1915. Bushes were cut and burned over 30 acres, and 20 acres of woodland was cut over and the wood sold.

ROADMAKING AND GRADING.

Twenty-five rods of the highway along the river bank was gravelled with beach gravel after several low spots had been stone-filled, and 475 loads of earth were taken off the sides of the farm road to give surface drainage from the farmyard, the earth being used to make an embankment leading to the approach to the dairy barn. The surface of the farmyard was also graded to give an even slope and surface drainage from the barns. Considerable grading on the farm road remains to be done.

LIVE STOCK.

A pure-bred Clyde mare, a grade Clyde mare, and two Percheron grade mares had foals sired by pure-bred Clyde and Percheron stallions, respectively. The pure-bred Clyde foal died from pneumonia four days after birth, and one of the Percheron foals died at three months of age from the same cause. The two remaining colts have made fairly good growth, the Clyde colt weighing on March 31, at eleven months, 860 pounds at a food cost of $32.17, and the Percheron filly weighing on the same date at ten months and twenty days, 740 pounds at a food cost of $30.26. Sires of these colts weighed 1,700 pounds, dams from 1,450 to 1,750 pounds. Ten mares were bred, but only five proved pregnant. An odd grade Clyde mare was sold and a general-purpose mare bought. The horses on hand at the end of the year were three pure-bred Clyde mares, five grade Clyde mares, two Percheron grade mares, two geldings of draught breeding, a general-purpose mare, a cross-bred standard bred Morgan driving mare, and the two colts above mentioned. Two non-pregnant mares were wintered on oat straw, hay and roots; their health was excellent, but they lost weight. The mare on turnips cost for food $3 per month, and in three months lost 115 pounds in weight; the mare on carrots cost for food $3.60 per month, and in three months lost 90 pounds in weight.

Of the thirty-nine feeding cattle mentioned in the last report, thirty-six steers were sold on May 27, after a feeding period of 141 days, at 6¾ cents and 5⅞ cents per pound according to quality. Two cows calved and were added to the dairy herd, and one cow died of blood poisoning.

Eleven heifers of no definite breeding, and typical of the average dairy stock among the farmers remote from towns, were bought for the purpose of testing their production from year to year, breeding them to good, pure-bred dairy bulls, and testing the resulting heifers to the third or fourth generation to ascertain what results can be obtained in increased production by the use solely of dairy-bred bulls. Ayrshires, Dairy Shorthorns, and Holsteins will be the bulls used.

Three small pure-bred herds of Dairy Shorthorns, Ayrshires, and Holsteins were put in and all are breeding. Two pure-bred Ayrshire calves died from pneumonia.

Thirty-six feeding cattle were bought in October, three heifers were sold for the Christmas market, two steers were slaughtered, one because of reaction to tuberculin test and one unthrifty for some undiscovered cause. Of the remaining thirty-one, twenty-five made an average gain per head of 277 pounds in the 136 days, almost exactly 2 pounds per head per day; and six dairy type steers gained 229 pounds in the 136 days, or 1⅗ pounds per head per day.

A calf feeding experiment was started March 1; sixteen calves divided into four pens of four calves each were fed. Pen 1 was fed on whole milk, pen 2, skim-milk and a meal and oilcake mixture, pen 3, Blatchford's Calf Meal and water, Pen 4, Blatchford's Calf Meal and skim-milk. The gain averaged approximately 50 pounds per head for the month in all pens but No. 3, which was only 27 pounds. The cost per pound of gain on whole milk was 7·7 cents, on skim-milk and meal mixture 2·8 cents, on Blatchford's Calf Meal and skim-milk 5 cents, and on Blatchford's Calf Meal alone 8·3 cents. This experiment will be continued to June 1.

Eighteen young pigs were put in temporary quarters on September 15 at from three to four weeks old to utilize dairy waste and unmarketable potatoes. They dressed 80 pounds on the average December 30, after 3½ months' feeding and at about 4½ months of age.

POULTRY.

The year was started with four small flocks of thirty Barred Plymouth Rocks, thirteen White Wyandottes, twenty-one Rhode Island Reds, and nineteen White Leghorns. The plant consisted of three colony houses, two incubators of 250-egg capacity each and one of 120 eggs, and two out-door brooders. One hundred and nine chicks were successfully incubated and reared in April, and 136 in May. Care was taken to incubate eggs from the best laying hens, and a number of fine birds resulted. During the summer, two permanent houses to accommodate 100 hens each were erected, and later a poultry administration building with incubator cellar. In this was placed a 1,200-egg incubator. A brooder house was later built and a coal-heated brooder installed. During the summer, autumn, and early winter, a number of both old and young birds were sold for breeding purposes and for table use. The winter was entered upon with 296 birds of all kinds; 45 additional pullets were purchased in December, giving 270 hens and pullets in all. These birds laid during January, February, and March, 5,914 eggs, some individual birds making exceedingly good records and some very poor. Care is being taken to select for hatching only well-formed, perfect-shelled eggs from the best laying hens.

APIARY.

On June 9 an apiary was started with five colonies of black bees in eight-frame Langstroth hives. The season was cold and backward, consequently they did not do as well as might be expected in a normal season.

No. 4 hive threw a swarm on July 20, and No. 5 on July 28. These were hived in eight-frame Langstroth hives. On September 9 the queens in these hives were destroyed and a day later imported Italian queens were successfully introduced by the smoke method.

The principal honey plants in this district are alsike, apple, aster, buckwheat, dandelion, fireweed, goldenrod, harebell, and wild raspberry.

The total production of honey for the season was 147 pounds extracted, and 59 sections.

CROPS.

Thirty-five acres of newly cleared land was sown to oats between May 23 and May 30. The yield per acre was from 25¾ acres, 22⅔ bushels; from 4¾ acres, 42 bushels of New Market; and from 4½ acres, 49 bushels Banner. As this land had only been ploughed once it was very rough and uneven in quality, and the seed had to be sown broadcast. A portion of the crop could not be gathered for threshing because of so many small roots on the ground. Weather conditions during June and July were so unfavourable that the crop did not get fairly started until August; no fertilizer of any kind was used.

Buckwheat was sown on 7½ acres of newly cleared land. All conditions were unfavourable to growth, and the yield was only 18 bushels per acre.

Eight acres of turnips yielded at the rate of 940 bushels per acre at a labour cost of 4·98 cents per bushel, and 7,295 roots of the Kangaroo variety were stored for seed production in 1915. Three varieties of sugar beets yielded from 410 to 484 bushels per acre, and five varieties of white carrots from 411 to 725 bushels per acre. Fourteen acres of corn yielded an average of 9 tons per acre of fairly well-eared stalks, and the labour cost of growing the corn and putting it in the silo was $2.94 per ton.

Ten and three-tenths acres of potatoes were grown. Four and one-third acres, on land without fertilizer either with the crop, or for many years previously, yielded 209 bushels per acre. Leaving out land unfertilized, the average yield per acre for the crop was 272 bushels. The surplus of the crop was shipped from the field direct to dealers in Saskatoon.

Hay from old sod, of which there were 40 acres cut over, yielded 1 ton per acre. Ten acres of newly-seeded clover under rather unfavourable conditions gave 1¼ tons per acre. Two small patches of alfalfa were seeded in July. The ground was limed, the seed inoculated, and a good stand secured. Peas and oats were sown for soiling crops on ground full of mustard. The growth of mustard was sprayed three times with bluestone solution, and thus partially kept under. The crop was all cut before any of the mustard could ripen seed.

HORTICULTURE.

Seventeen acres was devoted to horticulture, as follows: Old orchard, 2 acres; new orchard, 11 acres; small fruits, vegetables, flowers, and nursery, 4 acres. Six hundred and six apple, twenty-seven pear, one hundred plum, and sixty-nine cherry trees were set. A large number of varieties of raspberries, currants, gooseberries, strawberries, rhubarb, and grapes were planted, and considerable additions made to the nursery. A perennial border, 560 feet long, was established, and a large variety of roses and annual flowers also grown. Variety and fertilizer tests were made with vegetables, including 152 varieties of potatoes.

Seed plots of leading varieties of potatoes were hill-selected at harvest. The average weight of the largest hills, according to variety, varied from $2\frac{9}{10}$ pounds to 5½ pounds, and that of the small hills from $\frac{9}{10}$ pounds to 3¾ pounds according to variety. Sixty-five hills of "Wee McGregor" potatoes averaging 5½ pounds each in rows 30 inches apart and hills 12 inches apart in the rows yielded at the rate of 1,603 bushels per acre, while 353 hills of the same variety at the same distances averaging 1 pound each, yielded only 290 bushels per acre, evidencing the possibilities of seed selection and intensive cultivation. In the tests of 152 different varieties of potatoes, thirty yielded at the rate of over 400 bushels per acre, the highest being 510 bushels.

FERTILIZER EXPERIMENTS.

Tests as to the relative values of nitrate of soda *versus* fish scrap, and basic slag *versus* acid phosphate were made in the growing of potatoes. Nitrate of soda gave 16 bushels more per acre than fish scrap, and basic slag gave 8 bushels more per acre than acid phosphate. In using different quantities of the same fertilizer per acre, 500 pounds of a 4-8-10 mixture gave 291 bushels per acre, while 1,000 pounds of the same gave 311 bushels per acre, the gain in yield being only 20 bushels per acre worth, at 40 cents per bushel, $8, while the extra 500 pounds fertilizer cost approximately $10. The check plots on which there was no fertilizer gave 155 bushels per acre.

In testing the amount of potash used per acre it was found that the results were practically the same as last season; 6 per cent potash giving 305 bushels per acre; 10 per cent, 274 bushels; three per cent, 254 bushels; and no fertilizer, 171 bushels. Some striking results were obtained as to the economy of using a combination of fertilizer and light manuring *versus* heavy manuring in the growing of vegetables. In nearly every instance, much money was saved by using 15 tons of manure and a few hundred pounds of soluble fertilizer per acre against 30 tons of manure and no fertilizer.

MEETINGS AND ADDRESSES.

The arrangements for meetings on behalf of "Patriotism and Production" in New Brunswick were placed in the hands of the Superintendent. In this work he had the hearty co-operation of the Provincial Department of Agriculture, the officials of which took charge of the advertising of these meetings and the supplying of some of the speakers. The Superintendent attended and addressed nine of these meetings and attended the meetings of the Farmers' and Dairymen's Association, taking part in some of the discussions. Cattle were furnished for the judging work at the Agricultural School at Woodstock, and horses and cattle provided for the Farmers' and Dairymen's Association judging demonstrations.

Addresses were given at the agricultural school at Woodstock and at the Florenceville Seed Fair.

Visits were made to the Station during the year by the delegates to the New Brunswick Women's Institute Convention at Fredericton, by the members of the Farmers' and Dairymen's Association, and by the members of the New Brunswick legislature.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIERE, QUE.

The winter of 1913-14 was cold and dry, with little snow, which disappeared during the last days of March, although the soil remained frozen until the last of April.

Seeding commenced on May 9, but was not finished until the 31st, owing to rainy weather. During the latter part of June and throughout July extreme drought prevailed; this reduced the hay crops to much below the average yield.

CULTURAL WORK.

Destroying Couch Grass.—An experiment in bare summer-fallowing throughout the season, compared with good cultivation until June and then sowing a smother crop was carried on. The results this year did not favour the use of the smother crop. The bare summer-fallowing destroyed the couch grass only to the same degree as did disc-harrowing in the neighbouring field.

Methods of weed eradiction will continue to receive attention, along with the study of soil cultivation and rotation of crops.

HORSES.

At this Station we have one driving horse and five working teams. Two of these teams were purchased during the summer to meet the increase of work due to the enlargement of the Station.

An experiment in the economical wintering of horses was carried on. These were given light work and were fed on a ration of hay and oat straw. They remained in good health during the winter. They consumed slightly less than 1 pound per day of each of the above feeds per 100 pounds of live weight. The weights of the horses at the beginning and end of the test showed that they lost 2 and 2½ per cent, respectively.

CATTLE.

There are at this Station a good bull and twelve cows, registered Ayrshires, and seven calves of the same kind. There are also six bull calves, which may be sold for breeding purposes.

Six young grade cows were bought in May to carry on an experiment in grading up by the use of a pure-bred bull. These were obtained from the ordinary herds of the districts, and probably represent the average as milk producers. They were chosen for variety of colour and conformation with the view of showing the advantage of continued crossing with a pure-bred sire for improving milk production, and uniformity of colour and conformation.

SWINE.

There are at present on the Station a good Yorkshire boar and two sows of that breed as foundation stock.

BEES.

Thirteen hives wintered well in a dry and well-ventilated cellar. The Station apiary has attracted much attention from visitors who had an opportunity to observe the bees at work in a glass-fronted hive. The honey flow was abundant and of good quality.

EXPERIMENTS WITH CEREALS.

Not yet having land suitable for extensive tests of cereals, the work was confined to trials of the following: Wheat, Marquis and Huron; barley, Success and Manchurian; oats, Ligowo and Daubeney; and the Arthur variety of peas. These were tested in small plots in the young orchard planted in 1910. More extensive trials will be carried on as soon as the land to be used for the purpose can be prepared and drained.

HORTICULTURE.

Four hundred and eighty-six fruit trees were planted in the spring, including 318 apple, 108 plum, 40 cherry, and 19 pear trees. Many of the varieties represented had not previously been tried in this district.

Three hundred and twenty specimens of small fruits were planted in the new orchard. Two hundred and twenty-four varieties of vegetables were tested.

IMPROVEMENTS TO THE STATION.

Considerable work of this nature was done during the year, chiefly by removing stones and putting up fencing, etc. More than 900 rods of wire fencing were put up. The posts were all painted, and those along the road were turned. The stones removed were used for masonry, for paving the barnyard, and for foundation for the farm roads.

Buildings.—An old uninhabitable house was reconstructed so as to furnish two good dwellings, with stone foundations. A house for the farm scales was built.

DRAINAGE.

More than 18,000 feet of tile were laid in the fields, and 600 feet were used to complete the drainage of the barnyard, which was paved with stone and gravel during the summer. The yard is now firm and dry.

An approach to the new barn was also built. The sides of this approach are of stone, 3 feet thick, built on a deep foundation of large rocks and cement.

Cement platforms were built at the main entrances of the cow stable and the horse stable. The above, with the improvements made to the public roads, have done much to improve the appearance of the Station.

EXHIBITIONS.

Exhibits were made at Three Rivers and Quebec, of the products of the Station in fruits, vegetables, honey, etc. At Three Rivers the Station was awarded a diploma for the best exhibit of pure honey, and one for the best exhibit of vegetables. At Quebec a diploma was received for the best exhibit of vegetables, and the gold medal for the best exhibit of fruits and pure honey.

VISITORS.

These numbered 1,936 during the year, besides visits made by the Dairy Commissioner and his officers of this district, also by the professors and students of the Ste. Anne College of Agriculture.

VISITS MADE.

The Superintendent examined forty-six fields in the district, and gave practical demonstrations of cultural methods. He installed the Station exhibits at Three Rivers and Quebec, and judged at the L'Islet County Horticultural Show. He was present at the conference of agricultural missionaries at Ottawa, and later attended the conference of superintendents there. He also assisted the Superintendents at Lennoxville at a series of meetings in the counties of Compton and Wolfe.

METEOROLOGICAL OBSERVATIONS.

Month.	Temperature F.					Precipitation.					Hours of Sunshine.
	Date.	Maximum.	Date.	Minimum.	Mean.	Rainfall.	Snow fall.	Total	Number of Days.		
1914.		°		°	°	In.	In.	In.	Rain.	Snow.	
April	20	61·0	12	6·2	31·3	·54	5½	1·09	5	3	174·6
May	20	80·4	1	22·0	53·4	3·18	1	3·28	13	1	241·4
June	25	81·4	2	32·4	56·8	·92	.....	·92	15	......	235·6
July	14	91·4	29	37·2	63·6	·64	......	·64	2	....	288·2
August	10	89·4	22	34·6	60·0	1·04	......	1·04	5	....	238·8
September	21	82·4	30	31·8	50·5	2·34	......	2·34	7	....	178·6
October	2	66·2	28	30·0	47·2	3·46	1½	3·61	11	1	112·8
November	30	47·0	19	2·0	24·4	1·19	8	1·99	5	7	80·8
December	2	45·0	24	—24·2	9·6	·24	6½	·89	11	5	103·0
1915.											
January	7	47·3	31	—18·8	16·2	·92	7	1·62	3	5	78·4
February	16	39·5	2	—16·3	17·7	2·38	13	3·68	3	5	81·8
March	25	43·7	8	2·6	22·6	·10	7	·80	1	3	140·8
Total	...	....	......	....	....	16·95	49½	21·90	81	30	1·955·0

Note.—10 inches of snow are taken as equivalent to 1 inch of rainfall.

EXPERIMENTAL STATION, CAP ROUGE, QUE.

CHARACTER OF SEASON.

Spring was about an average one for earliness. The last frost occurred on May 17, when 29·2° F. was registered. A drought which lasted all through July until August 11 cut down the yield of hay and the stock-carrying capacity of pastures very much; it also hurt carrots, mangels, sugar beets, vegetables, all herbaceous flowering plants, raspberries and strawberries, whilst corn for silage, swedes, fruit trees, gooseberries, currants, ornamental trees and shrubs did not suffer. Early sown grain pulled through very well. The first frost was on September 29, when the thermometer went down to 27·2° F.; this was fourteen days later than in 1913. The lowest temperature was on February 11,—30·7° F., and the highest, exactly six months later, on August 11, 92° F.

LIVE STOCK.

All the live stock kept in good condition during the year.

HORSES.

At the beginning of the year, there were nineteen horses: fourteen registered French Canadians—nine mares, two 2-year-old fillies, one yearling stallion, two weanlings—also two teams of from 2,600 to 2,900 pounds and one driver. These horses are kept for work, experimental feeding, experimental housing, and to sell high-class breeders at a reasonable figure.

Work.—During the twelve months each horse averaged over 200 full days' work of ten hours.

Experimental feeding—Wintering an idle horse at low cost—By feeding 1 pound each of rough hay, oat straw, and roots per hundred pounds live weight, an 11-year-old mare, weighing 1,055 pounds on November 1, 1914, was kept for $13.64 until March 31, 1915, when she tipped the scales at 1,100 pounds. This experiment has now been made four years in succession, and the average cost, for 151 days, has been $14.33, with a gain in weight of 37 pounds for each horse.

Cost of raising horses.—All the feed given to a young stallion, from the time he was weaned until he was 22 months old was weighed and amounted to $90.69, at the following valuations: hay, $7 per ton; oats, 1½ cent per pound; bran, 1 cent per pound; pasture $1 per month. The average weight of the sire and dam of this colt is 1,075, and this is exactly what the youngster weighed at 22 months, which shows that, when matured, he will probably tip the scales at 150 to 200 pounds more than his parents. Two weanlings were kept until the March 31 following their birth for 18 cents each per day.

Experimental housing.—During the last three winters, five different colts have been kept outside, with only a single-board shed for a shelter, and the temperature went down as low as —31° F. They never even shivered, and though it may have taken more food to keep up the necessary warmth, they have kept in splendid health.

CATTLE.

The herd now comprises twenty-nine head of pure-bred and ten grade French Canadians: four bulls aged 8 months to 6 years, eighteen cows, thirteen heifers, four heifer calves. These cattle are kept for milk production, experimental feeding, experimental breeding, and to sell stock at reasonable prices.

Milk production.—Thirteen cows, aged 3 to 11 years, averaged 7,316 pounds of milk and 350 pounds of butter, which is 1,810 pounds of milk and 59 pounds of butter more per cow than the average for the herd in 1913. Weeding out the low producers was the main cause of the increase. Calculating hay at $7 per ton, roots and silage at $2 per ton, meal at 1¼ cent per pound, pasture at $1 per month, it cost 87 cents to produce 100 pounds of milk, and eighteen cents to produce a pound of butter. With the latter at 28 cents per pound and skim milk at 20 cents per hundredweight, the cows gave an average profit of $48.74 over cost of feed. An interesting fact is that the best six gave a profit of 104 per cent over cost of feed, whilst the seven others only gave a profit of 54 per cent. It would probably pay to weed again next year.

Experimental feeding—Best quantities of meal to feed.—In 1913 and in 1914, fifteen cows were used for an experiment which lasted over 300 days altogether. These cows were a fairly uniform group as to weight, production, time elapsed since calving, and they were all fed the same quantities of roughage. A certain number received as much meal as they would eat, which was 1 pound per 2·25 to 2·5 pounds of milk; the next lot got 1 pound of meal per 4 pounds of milk; whilst the last lot were given 1 pound of meal per 8 pounds of milk. Partitions were put in between cows, in the mangers, so that no one could be robbed by her neighbours, and sawdust was used as bedding so that no straw could be eaten. The lot which received an unlimited quantity of meal averaged the most profit.

Cost of raising heifers.—It is the intention to find out exactly the cost of feed necessary to raise a heifer until she is in milk. All the feed given to three calves was weighed, and it cost $23.18 to bring each of them to 6 months, when their average weight was 361 pounds. Hay was valued at $7 per ton, roots at $2 per ton, meal at 1¼ cents per pound, whole milk at 1½ cents per pound, and skim-milk at 20 cents per hundred weight. It is probable that the cost can be decreased by feeding less whole milk and more skim-milk, and this will be tried another year.

Selling breeding stock at a reasonable price.—Nine cows have now qualified for Record of Performance, and none will be kept that cannot do the same thing.

SHEEP.

There are seventeen pure-bred Leicesters: one ram and sixteen ewes: five aged, seven shearlings, and four lambs.

POULTRY.

One breed only is kept, Barred Rocks. About 150 hens and pullets were wintered. A good building, comprising incubator, egg, killing, and feed rooms and a granary, was built; also a 32 foot by 16 foot permanent house for 100 hens, and three colony houses 12 feet by 8 feet.

BEES.

Sixteen colonies were put in the cellar of the Superintendent's house in the autumn of 1914. The average production of honey was 37 pounds per hive.

FIELD HUSBANDRY.

Work under this head comprises comparison of different rotations, cost of producing field crops, rates of seeding corn for silage, oats for grain, timothy and clover for hay, yield of hay with oats as a nurse crop sown at different rates, and yield of hay with different nurse crops.

ROTATIONS.

Three rotations have been compared: (1) Three-year, swedes, oats, clover; (2) four-year, swedes, oats, clover, timothy; (3) six-year, swedes, oats, hay, hay, hay, hay. In four years from 1911 to 1914, inclusive, the returns per acre increased 42 per cent for the three-year rotation, 83 per cent for the four-year, and 30 per cent for the six-year. Though the relative increases may change with time, it is evident from these figures that proper rotation of crops pays.

COST OF PRODUCING FIELD CROPS.

Accurate records were kept of the cost of production of three of the main crops of the district: swedes, oats, and hay, on 13 acres of land, in 1914: a ton of swedes was produced for $2.18, a bushel of oats for 33 cents, and a ton of hay for $5.86.

RATES OF SEEDING CORN FOR SILAGE.

All corn grown on 39·46 acres since 1911, inclusive, was weighed. When sown in rows 48 inches apart and 8 inches in the row, it averaged 11·58 tons per acre; in rows 42 inches, 10·76 tons per acre; in hills 42 inches in all directions, 5·52 tons per acre; in hills 36 inches, 5 tons per acre. The average yield per acre, for the whole thing, was 8·32 tons.

CEREALS.

Work with cereals consists in trial of varieties, growing for sale or distribution the varieties which are best adapted to this district, and selection of the highest yielding strains by the head-row method.

TRIAL OF VARIETIES.

Four varieties of spring wheat, six of oats, three of six-row barley, and four of peas were tried on triplicate plots of one-sixtieth acre each. The results of four years show that the best varieties for this district are Huron wheat, Banner oats, Manchurian and Arthur peas.

FORAGE CROPS.

With forage crops, the work consists in variety tests, seed growing for sale or distribution, and selection of best strains as regards yield, hardiness, and composition.

VARIETY TESTS.

Nine varieties of Indian corn, five of carrots, eleven of mangels, four of sugar beets, and thirteen of swedes were tried on duplicate plots of one-hundredth acre each. The results of four years show that the following varieties may be recommended: corn for silage, Longfellow; carrots, Improved Short White; mangels, Yellow Intermediate; sugar beets, Vilmorin A; swedes, Good Luck.

SEED GROWING.

Seed has been grown of Good Luck swedes, and steps have been taken to grow seed of the best varieties of carrots, mangels, sugar beets, and Indian corn.

HORTICULTURE.

Work in this department is divided into fruit, ornamental gardening, and vegetables. It consists in testing varieties for earliness, yield, quality, hardiness, beauty, in cultural experiments, and in the propagation of the best kinds.

There are 1,118 apple trees of 122 varieties, 132 plum trees of 42 varieties, 50 cherry trees of 14 varieties, 11 pear trees of 4 varieties, and a number of the best kinds of grapes, currants, gooseberries, and strawberries.

Notes were taken of 1,401 varieties of ornamental plants: 269 annuals, 478 perennials, and 654 trees and shrubs.

Three hundred and four varieties or strains of vegetables were on trial, including twenty-two varieties of potatoes.

CULTURAL EXPERIMENTS.

These have been started in the orchards, to compare clover, rape, and vetches as a cover crop, also to compare these with clover followed by rape, and with permanent sod where the hay will be left on the ground for one part and taken off for the other. With vegetables, work will be undertaken to find out the best distances to thin, methods of blanching celery, of staking and pruning tomatoes, of controlling maggots, of starting onions, of forcing rhubarb, of treating potato tubers, etc.

FARM DEVELOPMENTS.

Many improvements were made during the year, the principal of which were a good system of waterworks and the macadamizing of 14 arpents of road fronting the farm. In buildings there were erected a poultry administration building, 18 feet by 26 feet, 2½ stories, and three colony houses 12 feet by 8 feet, whilst an implement shed, 80 feet by 25 feet, was moved next to the workshop. Nothing was done in fences, a few minor repairs only being made. About 10,000 feet of drains were put in, and a large open ditch dug, about half a mile long, to take away surface water coming from adjoining properties. Some 10 acres of land were cleared.

EXHIBITIONS.

Corn, roots, grain, vegetables, fruit, flowers, and honey were exhibited at Three Rivers and at Quebec, whilst a few things were sent to Sherbrooke. Ten horses and twenty head of cattle, all French Canadians, were shown at Quebec and at Sherbrooke. Every effort was made to bring out forcibly the educational side of the display, and competent men were in charge, glad to give visitors all reasonable information.

Some Weather Observations taken at Cap Rouge, 1913.

	Temperature F.			Precipitation.				Total Sunshine.
	Highest.	Lowest.	Mean.	Rainfall.	Snowfall.	Total.	Heaviest in 24 hrs.	
	°	°	°	Inches.	Inches.	Inches.	Inches.	Hours.
1914.								
April	54	6·2	30·12	1·19	6·8	1·87	·70	145·1
May	86	26·2	52·7	1·56	....	1·56	·59	239·7
June	86	32·2	56·36	3·28	....	3·28	·71	223·0
July	89	45·2	64·5	1·66	....	1·66	·58	279·8
August	92	40·2	61·9	4·43	....	4·43	·73	218·1
September	84	27·2	55·8	4·92	....	4·92	1·13	175·5
October	69	24·2	44·4	5·24	1·4	5·38	1·59	108·0
November	52	— 1·1	25·39	2·62	23·1	4·93	1·18	53·9
December	44	—22·8	13·7	·68	19·2	2·60	·50	76·3
1915								
January	45	—21·8	12·75	1·18	16·60	2·84	·50	52·9
February	34	—14·9	16·37	1·80	17·0	3·50	·70	78·2
March	40	5·2	22·3	....	3·20	0·32	·24	136·7
				28·56	87·30	37·29		1,787·2

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

The land for this Experimental Station was purchased in the fall of 1913 and was taken over by the Department of Agriculture on April 1, 1914. It comprises an area of approximately 436 acres, 320⅔ acres in the township of Ascot, and the remaining 115⅓ acres in the corporation of the town of Lennoxville. The centre of the farm is about 1 mile from the centre of the town, one of the most central points in the nine counties comprising the Eastern Townships of the province of Quebec, which this farm is supposed to serve. Lennoxville has a population of 1,300, is located on the main line of the Canadian Pacific, Grand Trunk, Boston and Maine, and Quebec Central railways, which gives it the best railway facilities of any place in the Eastern Townships. It is also connected by electric car service, every fifteen minutes, with the city of Sherbrooke, the principal city in the Eastern Townships, which is only 3 miles distant and has a population of 19,000. To complete the description it may be stated that this farm is situated 104 miles east of Montreal, 28 miles north of the boundary line of Vermont, and is in latitude 45° 20′ north and longitude 79° 49′ west, with an altitude of 500 feet.

THE FARM.

The farm is made up of different areas purchased from the following gentlemen:—

R. W. Reid	168½	acres.
W. H. Pearson	150	"
E. Reed	108	"
W. J. Douglas	6½	"
H. Bennett	2¼	"
C. F. Carter	¾	"

making a total of 436 acres.

This farm is bounded on the north by the St. Francis river and the Cookshire road, on the east by divisional lines, on the south by the Canadian Pacific railway and divisional lines, and on the west by Bishop's College property. The surface of the farm near the river bottom is quite level, with undulating fields rising towards the south and east and from the high parts of which a magnificent view of the St. Francis valley and the town of Lennoxville may be obtained.

THE SOIL.

The soil near the river bottom is a clay loam, and 23,000 feet of tile was laid in these low-lying fields this past season. The soil of the fields rising from these flats is more of a sandy loam and is, of course, on that account well adapted for most crops. The land at the back of the farm is quite rough, never having been broken, and will be used for sheep pasturage until such time as it can be worked over and got into proper shape for crop production. There is approximately 20 acres of bush on the farm.

FIELD WORK.

When this Station was organized by the Dominion Department of Agriculture, April 1, 1914, the first work was drawing three carloads of fence posts from the station for the erection of farm fences. This was followed by drawing manure shipped from Montreal, which was applied to 25 acres of old timothy sod in very poor condition, but on which it was desired to grow corn in 1914. Breaking this sod began May 1, followed with a rolling to pack solid and conserve moisture; a little later discing was commenced with a double cutaway disc, on which were used four horses, followed by a 20-foot smoothing harrow, which put the soil into fine tilth. Corn planting was commenced on the 28th, Wisconsin No. 7 and Longfellow being the varieties used, sown in check rows 36 inches apart each way. A smoothing harrow was used until the corn was well through the ground when a two-row riding cultivator was kept going as long as a team could work through, after which a one-horse cultivator was used for one cultivation. When this crop was cut in September it was found to be well eared and yielded a good tonnage. A 20-horsepower steam engine and large Blizzard blower were used to fill the silos. Considering the poor condition of the soil and the quality of manure used, the crop secured demonstrated very conclusively that the district is well adapted to the raising of this important crop. There was also sown on land ploughed in the fall of 1913 for former owners, 49 acres of Banner oats, and 10 acres of two-row or duckbill barley. Thirty-four acres of this 59 were seeded down to timothy and red clover at the rate of 10 pounds of each per acre. The grain was harvested in the latter part of August but had to stand in the shocks for some time on account of rainy weather. When dry it was drawn from the shocks and threshed at once, yielding approximately 45 bushels of oats and 36 bushels of barley per acre.

FENCING.

Fencing was commenced in the month of September on the north boundary of the farm, and was continued around the farm a distance of 4½ miles, using a 4-foot woven fence, nine strands, No. 9 galvanized wire, with stays 16 inches apart, posts set 16 feet apart, 3 feet deep with corner and brace posts 4 feet deep, well braced and anchored. Some divisional fences were also completed.

ROADS.

The main travelled thoroughfare through the farm is the Cookshire-Eaton road, which is the outlet of a large farming district in the counties of Compton and Wolfe to the city of Sherbrooke.

DRAINAGE.

Twenty-three thousand feet of tile were laid this past season according to plans and specifications drawn up by the Field Husbandry Division of the Central Experimental Farm, Ottawa. There was also 1½ miles of open ditch opened up, 6 feet at top tapering to 2½ at bottom, 3 feet deep.

BUILDINGS.

There are six houses on this property, three of which have been painted, papered, fitted throughout with hot and cold water, and electric lights installed. One of these is occupied by the Superintendent, one by the foreman, and the other is used as a boarding house.

The barns used are those which were on the different properties when taken over, very little outlay being put on them, in expectation of new buildings being built soon. The horse stable which was on the property formerly owned by R. W. Reid includes space for twelve horses and a harness room, and is used for that purpose; the balance of the horses, six in number, are stabled in the R. W. Reid barn, the remainder of said barn being used for beef steers and sheep. The barn on the property formerly owned by E. Reed is also used for cattle.

SILOS.

Two stave silos were erected this past summer, 18 feet in diameter, 30 feet high, with a capacity of 320 tons.

WATER SUPPLY.

Water for use at the Superintendent's, foreman's and boarding houses, also the barns on the R. W. Reid property, is furnished from a driven well 16 feet deep which is connected up to a Heller-Aller compressed air tank system, the pump being run by electric current.

LIVE STOCK.

Horses.— There are now at this Station three imported registered Clydesdale mares, three Canadian-bred registered Clydesdale mares, ten other well-graded Clydesdale work horses, one driving horse, and one registered foal dropped on September 1, 1914.

Cattle.—Seventy-eight beef steers were fed at the Station this past winter. Forty-eight of these were sold on March 30, the balance are still on hand and will be ready for market the first of May. These cattle were fed on corn silage, hay, and concentrates consisting of bran, barley, cotton seed and oilcake meal.

There were also two different feeding experiments carried on, the results of which will be found in the Dominion Animal Husbandman's report.

Sheep.—Fifty-four common grade ewes of different breeds were purchased locally from different farmers, with the object of experimenting in the eradication of weeds, such as the orange hawk weed, better known in the Townships as the paint-brush, ox-eye daisy, etc., with which the rough pasture land in this section is badly infested. It is also proposed to carry on a grading experiment with this flock by using the best registered rams of some particular breed, probably Oxford, for a number of years, and the selection of the best ewe lambs for breeding purposes with a view to demonstrating to the farmers the improvement that can be made in their flocks by working along such lines. The quality and quantity of wool, and the weight of the sheep and lambs will be taken into consideration each year.

HORTICULTURE.

One of the first things done at the opening of this farm was the planting out of a nursery of ornamental trees and shrubs for future use. These have done very well through the summer and after this season a report on their hardiness can be made. There have also been set out twenty-six varieties of strawberries, which will be ready for permanent plantation this spring.

VEGETABLES.

Tomatoes.—One-half acre of tomato plants of different strains, bred at the Central Experimental Farm and sent to be tested out for earliness and productiveness was set out. Alacrity-Ponderosa was found to be a very prolific variety, with Alacrity-Dwarf Stone not far behind, being a very abundant bearer and with fruits almost free from roughness.

Corn.—Fifty-four varieties of sweet corn were planted June 5. The season not being very good for corn, most of these varieties did not mature sufficiently for use. It was found that Early Dawn was the earliest and of a very good quality, Malcolm next, and Malakoff not far behind.

Potatoes.—Six different varieties of potatoes were planted for hill selection. These were Carman, Empire State, Early Ohio, Green Mountain, Irish Cobbler and Gold Coin. Of these varieties a selection of one hundred hills of each was made, and also one hundred hills as they came in rows. It was found that some of the varieties of selected hills produced 100 per cent more than the unselected.

FLOWERS.

Several varieties of perennial flower seeds were planted July 16, and these will be used for perennial borders later on. They came on very well, were transplanted into beds, and many of them were in bloom before winter set in. There is also a collection of narcissi, tulips, and hyacinths in the ground ready for flowering this spring.

GENERAL WORK.

Through the winter months hot-bed frames were made, sashes painted and glazed, stakes labelled for orchards and vegetables, and all other preparatory work completed.

Ten acres for cultural orchard, 8 acres for variety orchard, vineyard and other small fruits which will be planted this spring, were set aside.

EXHIBITIONS.

There was shown from this Station, in conjunction with the Central Experimental Farm exhibit at Canada's Great Eastern Exhibition held at Sherbrooke in September last, a small exhibit, consisting of vegetables of different varieties, field corn, flowers, grasses, and grains.

MEETINGS.

During the months of February and March, the Superintendent attended thirty-four meetings in the different counties comprising the Eastern Townships in connection with the Patriotism and Production campaign. Much assistance was given in these meetings by the staff of the Central Experimental Farm, Dominion Department of Agriculture, and the Commission of Conservation, Ottawa. These meetings gave the Superintendent a good opportunity of studying the conditions in the different sections and of getting in touch with the farmers, who appeared to be very anxious to gain any information possible along agricultural lines.

MISCELLANEOUS.

Visitors.—Although this farm has been in existence only since April 1, 1914, many visitors from the different sections of the Eastern Townships have taken the opportunity of visiting it.

EXPERIMENTAL FARM, BRANDON, MAN.

The season of 1914 at Brandon began rather favourably, and until July 1, crop conditions were good. However, a period of extreme heat with drought and high winds set in during June and continued throughout July and into the month of August. This brought on extremely early maturity of crops and consequent shrinkage of yield. Harvesting was completed by August 13 on this Farm, or about the time that it usually begins. Grain crops were about two-thirds to three-quarters of a normal yield, and all other crops suffered proportionately.

TESTS OF CEREALS.

The usual tests of varieties of cereal grain crops were conducted on uniform duplicate plots. Marquis wheat, as usual, excelled all other varieties. Its advantage over Red Fife was greater than usual this year as the Red Fife, being later, suffered much more severely in the hot winds. The five-year averages for these two varieties are: Marquis, 42 bushels, 36 pounds per acre; Red Fife, 37 bushels 23 pounds per acre. In oats, some of the earliest varieties gave best results this year on account of the dry weather, but the Banner variety makes the best showing on the five-year average. The varieties of barley that are giving best results are: Manchurian, Garton's No. 68, and O. A. C. No. 21. Of nine varieties of peas grown, Arthur is considered the most desirable on account of its earliness. Three varieties of flax obtained from the North Dakota Agricultural College have done very well; N. D. R. 52 has given the best two-year average.

FIELD HUSBANDRY.

The work with crop rotations is one of the most important being conducted on this Farm. Eight rotations, occupying more than half the land on the Farm, are being tried out. They include a straight grain-growing rotation various stages of the development of mixed farming, and various arrangements of crops in the mixed-farming system. Very satisfactory results are being obtained, showing conclusively that greater returns are possible from a diversified, balanced system of farming than can be obtained from growing grain only.

The extensive system of cultural experiments inaugurated in 1911 has been continued, and a large mass of figures is being collected which it is hoped will give valuable information in regard to the best methods of soil cultivation. Among the lines of investigation being followed are: depth of ploughing, methods of handling summer-fallow, methods of handling stubble land, breaking sod, seeding down, applying manure, green manuring, preparation of seed-bed, soil packers, depth of seed, fertilizers and drainage.

FORAGE CROPS.

Experiments with different varieties of grasses, alfalfa, clovers, and mixtures of the same, gave very interesting results. Alfalfa shows itself to be decidedly the most productive forage crop, whether alone or in mixtures. Western Rye grass also gave good results. Experiments with crops that may be used for growing hay the same season as sown, showed oats to be the best, considering both yield and palatability. Hairy vetch also gave good results for this purpose.

Seventeen varieties of Indian corn were tested. The yield of fodder was less than usual, but six varieties produced ripe grain. Among the best varieties of fodder corn for Manitoba are: Northwestern Dent, Longfellow, Minnesota No. 13, and North Dakota White. Fourteen varieties of turnips, thirteen of mangels, and five of field carrots were tested.

HORTICULTURE.

The usual tests of a large number of varieties of vegetables were made, and are reported in detail in the horticultural report. The season was very unfavourable for most kinds of vegetables, but by means of thorough cultivation, good yields were obtained. Notes were taken on the appearance and table quality of the vegetables, as well as the yield and date of being ready for use.

A good crop of apples was harvested from many of the cross-bred trees originated by the late Dr. Wm. Saunders, and from seedlings of these cross-breds. Some few standard apples were grown, but not in commercial quantities. An effort is being made to originate a hardy standard apple through the use of large numbers of seedlings of the hardiest kinds obtainable. Over ten thousand of these seedlings are now being grown.

The plum crop was hardly up to average, and yet quite a large quantity of plums of selected native strain was grown. This type of plum is found to be the best.

Tests of varieties of strawberries, currants, gooseberries, and raspberries are being conducted and the hardiest varieties being determined. Good results are being obtained.

The display of flowers was the poorest in many years. The heat and shortage of water were the cause. However, even under these circumstances, the flowers were fairly attractive and some valuable information was obtained as to the most drought-resistant varieties. Perennials did well despite the dry weather. The trees and hedges form a constant demonstration of the possibilities of the country, and as to the proper kinds to use.

LIVE STOCK.

The cattle kept on this Farm are Shorthorns of the dual-purpose type. Some of them are proving very satisfactory milkers. One has made an official Record of Performance record of 12,655 pounds in one year. Records have been kept of the feed used by each animal, and as a result data are available as to the cost of milk production and the raising of young cattle.

An experiment in steer-feeding in which corn ensilage was compared with dry corn fodder was completed in the spring of 1914. The result was strong evidence in favour of the use of silos for the storage of corn. The experiment which is being conducted this winter, 1914-15, is a comparison of corn silage and straw *versus* alfalfa hay *versus* mixed grass hay, and also outdoor feeding *versus* stabling. The experiment is not completed.

The flock of breeding ewes has been utilized for an experiment in comparing alfalfa *versus* mixed hay, and also wintering in a rather expensive sheep barn *versus* an open shed. The alfalfa gave best results as a feed, and no great difference could be observed as a result of the difference in shelter. Data on the cost of feeding sheep are also being collected.

An experiment in pig feeding was conducted in which barley was used as the main food, and other foods were tested as regards their suitability for mixing with barley. Feed flour mixed with barley in the proportion of 1 to 3 gave best results, pure barley second best, shorts and barley came third, with chopped oats and barley a poor fourth. Wintering sows outdoors is also being more fully demonstrated as the best method.

POULTRY AND BEES.

The White Wyandotte and Barred Rock breeds are kept. Colony houses are used exclusively on this Farm, and are found quite satisfactory. Experiments were conducted in different types of construction, and figures are presented in the poultry report showing the temperatures recorded. Egg records kept show the pullets to be much better winter layers than the 1-year-old or older hens.

The apiary on this Farm is being used as a source of supply in stocking up the newer Stations. It has been handled more for multiplication than for honey production. Nevertheless, a fairly good crop of honey was garnered, despite a very unfavourable season.

BUILDINGS.

A new solid concrete silo, 16 feet across inside and 34 feet high, was built this year. A stave silo has been in use some years, and it will now be possible to compare the two kinds. A large cement root-house was built under ground in the side of the hill behind the cattle barn. A shed for the threshing separator was also built this year.

EXHIBITIONS.

A large exhibit got up at the Central Experimental Farm was shown at the Brandon and Winnipeg summer fairs. In addition, an exhibit showing some of the work of the Brandon Farm was shown in combination with the general exhibit. An exhibit of horticultural products was made at the annual show of the Brandon Horticultural Society in August 1914.

MEETINGS.

The Superintendent addressed meetings of Manitoba farmers at the following places in the province during the year: Virden, Reston, Souris, Hartney (twice), Melita, Morris, Emerson, Stonewall, Portage la Prairie, Neepawa, Carberry, Carman (twice), Elgin, Hamiota, Oak River, Russell, Birtle, Roblin, Grandview, Gilbert Plains, Dauphin, Valley River, Sifton, Ethelbert, Bowsman, Swan River, Benito, Durban, Kenville, Minitonas, Ste. Rose du Lac, and Makinak. "Rotation of Crops," "Corn Growing," and "Practical Methods of increasing Production," as well as several other topics, were taken as the subjects of addresses.

The assistant Superintendent judged Seed Fairs and addressed meetings at Minnedosa, Kelwood, and Roblin, speaking at each place on "Hog Raising."

VISITORS.

It is estimated that about 10,000 persons visited the Farm during the year.

METEOROLOGICAL RECORD.

The meteorological record for the year is as follows:—

Months.	Highest Temperature. F.	Lowest Temperature. F.	Mean Temperature. F.	Total Rainfall.	Total Snowfall.	Hours Bright Sunshine.
	°	°	°	Inches.	Inches.	
1914.						
April	69·9	5·8	35·9	2·32	2	141·6
May	80·4	19·8	45·6	2·28	......	196·1
June	88·2	31·5	57·6	2·38	......	179·6
July	101·5	42·5	70·3	1·91	......	267·1
August	102·	29·	62·5	1·02	......	239·
September	87·	26·6	55·1	2·45	......	208·9
October	82·5	13·5	47·	1·54	......	157·8
November	61·6	—27·8	22·1	·03	7	104·3
December	32·5	—31·8	2·7	......	1	82·4
1915.						
January	30·5	—42·5	— 1·		7	98·5
February	32·	—20·	14·1		2	85·8
March	52·1	—15·8	23·1		4	193·3
Total				13·93	23	1,954·4

Reckoning 10 inches of snowfall as equivalent to 1 inch of rainfall, the total precipitation for the year ending March 31, 1915, was 16.23 inches.

EXPERIMENTAL FARM, INDIAN HEAD, SASKATCHEWAN.

WEATHER CONDITIONS.

The season of 1914 was far from being favourable for the production of cereal, fodder, or horticultural crops. While there was considerable moisture in the soil from the fall and early spring rains, the dry weather which prevailed during the latter part of May, June, and July resulted in a very short crop of hay, light yield of grain, and vegetables and fruits of an inferior quality. A severe frost on August 9 completely destroyed many of the more tender vegetables and flowers, greatly lowered the feeding quality of ensilage corn, and caused the late-sown wheat to be reduced in quality from one to three grades. The dry weather and frost resulted in the harvest starting one month earlier than the previous season so that the grain was all threshed and much of it marketed early in the season, allowing a large amount of time for fall cultivation. This facilitated the preparing of a larger acreage for crop in 1915.

INVESTIGATIONS IN PROGRESS.

Cereals.—Four named varieties of wheat were under test in 1914. Of these the Marquis is best adapted for the climatic and soil conditions of southern Saskatchewan. While the Prelude was the only wheat which matured before the frost, the yield was so low that it is not likely to become a commercial wheat in this portion of the province. Out of the large number of varieties of oats grown, the Victory and Banner are among the best. The Manchurian and O. A. C. No. 21 barleys were again among the highest yielders of the six-row type. The two-row sorts did not yield as high, and have a considerably weaker straw. Among these the Canadian Thorpe and Gold gave good results. Premost flax was the highest yielder. Novelty, a new variety produced by Dr. Saunders, gives promise of equalling, if not surpassing, Premost. Arthur and Solo peas gave best satisfaction, maturing much earlier than the other sorts.

Forage Crops.—From the result of tests of different grasses, the Western rye seems to be the best adapted for the production of hay, and Brome for permanent pasture. Among the legumes, alfalfa is best suited to conditions in southern Saskatchewan. At Indian Head the Grimm and Baltic varieties have again given best results. While the fodder corn was badly damaged by frost, it gave a large amount of fodder which was stored in the silo. While this was not equal to the silage produced in former seasons, it supplied a large quantity of succulent feed during the winter. The Northwestern Dent gave best satisfaction. Varieties of turnips, mangels, sugar beets and carrots were tried out at Indian Head this season. For soiling or early fall feeding the fall turnip will give good results and produce a high yield, but for winter feeding only swedes should be used, as they are good keepers and can be fed until the early spring.

Horticulture.—A large number of the varieties of the different kinds of vegetables have been under test for five years, and the inferior sorts will be eliminated this season, giving more time and space for the conducting of cultural experiments with vegetables. The perennial flowers which have proven perfectly hardy are being increased in number, and the seed and roots will be distributed as soon as a supply can be obtained. An endeavour is being made to acclimatize or originate a standard apple that will produce in southern Saskatchewan. A large number of seedlings of the hardy varieties are being propagated, and it is hoped that some of these may produce an edible apple hardy in the West.

Some of the plantations of forest trees which were set out some years ago were cut out during the fall and made into cordwood. Besides the trees in the avenue, plantations, and windbreaks, a large arboretum is maintained. Many of the trees being tried out are proving hardy, and will make magnificent lawn trees. Among the deciduous specimens the Manitoba maple, green ash, and birch are proving most satisfactory. Of the conifers, the Scotch pine seems to be most hardy. Caragana and lilac are both hardy plants, and produce an abundance of bloom in the early spring.

Field Husbandry.—While the season was unfavourable for the production of crops, the results obtained from the field husbandry experiments were very satisfactory, and quite a number of lessons in moisture conservation were learned. A large portion of the Farm is divided into small plots for the purpose of studying different methods of cultivation and crop management and such problems as different methods of summer-fallowing, preparing stubble land for crop, depth of ploughing, methods of packing and different crop rotations are being studied.

Live Stock.—The experimental work with horses includes the cost of producing work horses from both pure-bred and grade mares, and different methods of feeding the idle horses during the winter. The Clydesdale is the breed that is being used.

A start was made to develop a dual-purpose herd of Shorthorn cattle. This season all cows which freshened were put into the test, and the better milkers will be bred to bulls from recognized milking strains.

In the winter, a large amount of experimental feeding is conducted.

This season, two carloads of steers were fed, and such questions as the most profitable age, the best method of sheltering and different rations were investigated.

Shropshire sheep are the breed kept on this Farm. The pure-bred flock is not very large at present and, as it was believed that the sheep could be utilized to good advantage in keeping down the weeds on the summer-fallow, one hundred ewe lambs were purchased last fall and put on feeding experiments during the winter. These will be pastured on the fallow fields and roadways during the summer, and in the fall will be bred to pure-bred rams and their offspring used in feeding experiments. A carload of wether lambs were also fed. These were purchased from a rancher near Lethbridge, and a record kept of the loss in shipping and cost of delivering the lambs at Indian Head. They were then broken up into lots of about twenty-five each, given different degrees of shelter and fed different rations.

Two breeds of hogs are kept at the Indian Head Farm—Yorkshires and Berkshires. No experimental work has been carried on with swine, as a piggery would be necessary for the conducting of it.

The poultry was increased by purchasing a number of bred-to-lay Barred Rocks and White Wyandottes from breeders in Quebec. These were kept in cotton-front houses of different types. In the houses a thermometer was kept which gave a record of the maximum and minimum temperatures.

BUILDING.

During the year very little building was done at this Farm. In the fall an implement shed was put up. This was used during the winter for feeding steers and sheep, but will be utilized in the summer for the farm machinery. A number of the older buildings were repaired and painted, which gave them a somewhat better appearance.

EXTENSION WORK.

During the summer months the Superintendent spent one week on the Provincial Government demonstration train, which at that time was touring the Weyburn-Lethbridge line, and delivered lectures on conservation of moisture and the importance of good seed. In June he also gave two lectures in Regina, before the Convention of Agricultural Secretaries, on soil cultivation and forage crops. In August he visited the Rosthern Experimental Station at the time of their annual excursion, and discussed the varieties under test with the excursionists. In the fall he judged at several seed fairs and gave addresses on the work of the Indian Head Experimental Farm at Windthorst and Grenfell. In December he attended a Farmers' Convention in North Battleford, and gave lectures on moisture conservation and crop rotation.

VISITORS.

During the summer a large number of farmers from outlying districts called at the Farm and discussed their problems with the Superintendent. He also endeavoured to go out when possible and visit the farmers in the vicinity of Indian Head, and discuss with them their problems.

EXHIBITIONS.

In conjunction with the exhibit prepared at Ottawa, one was prepared at Indian Head, which gave an outline of the work being conducted and the results being obtained. A panel setting forth the yields of wheat obtained by different methods of summer-fallowing was the centre of attraction at the fairs where it was on exhibition.

METEOROLOGICAL RECORDS, EXPERIMENTAL FARM, INDIAN HEAD.

Month.	Temperature F.					Rainfall.		Snowfall.	Sunshine
	Maximum.		Minimum.		Mean.				
1914.	Date.	°	Date.	°	°	Days.	Inches.	Inches.	Hours.
April	15	70	6	2	37·53	2	·09	12·	158·5
May	27	83	10	22	50·54	2	·58	10·	243·4
June	2	90	13	40	59·06	6	2·28	....	219·6
July	27	100	16	42	69·80	3	1·50	....	304·6
August	7	89	9	29	59·42	5	1·33	....	231·6
September	18	88	23	28	54·73	3	·47	....	181·9
October	1	80	25	10	44·29	4	1·16	....	126·2
November	2	56	17	—23	24·33	2	1·3	9·	65·7
December	3	27	25	—32	1·93	....	....	4·50	23·3
1915.									
January	18	30	27	—42	3·06	....	....	4·50	37·1
February	17	37	5	— 8	16·82	....	....	5·25	71·6
March	21	51	2	—17	22·55	2	·75	....	195·6
						29	8·29	45·25	1,859·2

EXPERIMENTAL STATION, ROSTHERN, SASK.

CHARACTER OF THE SEASON.

The season of 1914 opened auspiciously; seeding was done in good time and, until the middle of June, growth was more than normal and crops promised a higher than average yield. The expected June and July rains did not come, however, and all crops, especially those put in under any but the most favourable conditions, suffered heavily during July from drought and at harvest time much of the grain was so poorly developed that some fields were not cut. It was a season which sharply defined the careful farmer from the careless one.

Following is the meteorological record for the year April 1, 1914, to March 31, 1915:—

Month.	Temperature F.					Precipitation.			Sunshine.
	Highest	Date.	Lowest.	Date.	Mean.	Rainfall.	Snowfall.	Total.	
1914.	°		°		°	Inches.	Inches.	Inches.	Hours.
April	69·1	16th	5·3	19th	35·8	0·48	1·5	0·63	209·7
May	80·1	16th	22·2	10th	49·8	1·96	....	1·96	264·3
June	84·2	16th	33·3	25th	58·7	2·00	....	2·00	308·3
July	93·8	28th	41·2	23rd	67·5	1·40	....	1·40	339·6
August	87·0	2nd	32·8	10th	60·0	1·12	....	1·12	273·9
September	79·3	19th	30·1	21st	50·9	0·97	....	0·97	203·0
October	81·2	1st	16·7	26th	42·5	1·57	....	1·57	145·7
November	49·9	1st	—20·0	17th	21·7	0·31	8·9	1·20	100·0
December	23·8	1st	—31·8	25th	1·1	....	5·2	0·52	49·5
1915.									
January	30·3	5th	—45·5	27th	0·2	....	6·0	0·60	103·6
February	29·0	18th	—13·3	1st	8·8	....	5·0	0·50	134·7
March	43·0	22nd	—14·8	2nd	17·7	....	....	0·00	190·6
Total from April 1st, 1914, to March 31, 1915	....	....	....	....	....	9·81	26·6	12·47	2,322·9

EXPERIMENTAL WORK.

The experimental work begun in 1911 in cultural methods has been continued but, owing to irregular areas being affected by alkali, the results have been anything but satisfactory. Experiments seeking the relative merits of varieties have been continued in cereals, legumes, roots, corn, and potatoes. Last year there were some hybrid beardless barleys, originated by Dr. Chas. Saunders, tried with very satisfactory results. A number of varieties that had proved unsatisfactory in previous years were discarded last year.

FARMERS' EXCURSIONS AND VISITORS.

With the co-operation of the Canadian Northern Railway, an excursion to the Experimental Station was arranged for July 9 from points west of Prince Albert as far as Blaine Lake and east as far as Tisdale. Special trains were run for the occasion, arriving at 11 a.m. and leaving at 5 p.m.

Assistance was rendered by the Superintendent of the Indian Head Experimental Farm and members of the staff of the University of Saskatchewan. Upwards of three hundred farmers, with their wives and families, availed themselves of the holiday, and altogether the event was so satisfactory to both the railway officials and the management of the Experimental Station as to warrant them in making it an annual affair.

EXHIBITIONS.

The Rosthern and Scott Experimental Stations joined in making an exhibit at the Saskatoon and Prince Albert Exhibitions, representative of the work done at the two Stations. There was a display of fruits, vegetables, flowers, grains, and fodder crops. The exhibit was in charge of an officer from the Central Farm, who also displayed the work of the various Divisions at Ottawa. This exhibit elicited much favourable comment from both the visitors at the exhibitions and the Exhibition Boards.

MEETINGS ATTENDED.

The Superintendent attended a conference of Experimental Farm Superintendents and Dominion Farm officers in Ottawa during January, and attended a series of twenty-five meetings on Patriotism and Production held in various parts of the north of the province during February and March.

ADDITION TO THE STATION.

During the past year the Government extended the area of the Experimental Station by the addition of three quarter-sections and a strip of 15 acres along the Canadian Northern railway. The Station now comprises almost a complete section, besides the strip along the railway, a total area of nearly 650 acres. The new land is mostly level and very uniform, and will lend itself satisfactorily to experimental work. It has been cropped for several years and is in rather poor tilth, and most of it will have to be summer-fallowed the coming season.

NEW BUILDINGS.

In the summer of 1914 a foreman's house was built 22 feet by 26 feet, two stories high, with full cement basement, hot-air furnace, waterworks and sewage disposal. The water pressure is obtained from a tank 2 feet by 2½ by 5 feet in the attic, and the supply is obtained from a well just outside the house, and may be pumped either by hand or by gasoline engine power. The whole plan lends itself admirably to the requirements of an ordinary farm.

LIVE STOCK.

Cattle.—There are two cows kept at the Experimental Station. These are of the dual-purpose Shorthorn type, and supply sufficient milk for the requirements of the families living at the Station. There were purchased last year two Holstein heifers of good breeding.

Horses.—The five work horses and two drivers kept at the Station were in good condition throughout the past year, and were sufficient to do the work. At times it was necessary to call on one of the drivers to help out in the farm work.

Owing to the extension of the farm it was necessary to purchase eight more work horses in March. Two of these are of the Belgian draught type and the remainder of the Clydesdale type.

WATER SUPPLY.

The water used at the Station has been supplied by shallow wells, and has been insufficient for the requirements. A well was drilled to a depth of 106 feet, and a supply of water obtained reaching to within 20 feet of the surface of the ground. After pumping for a day the supply was shut off by sediment. This was cleaned out and the pumps started again with the same result. An attempt will be made to solve the difficulty during the coming season.

EXPERIMENTAL STATION, SCOTT, SASK.

CHARACTER OF SEASON.

Without exception, the season of 1914 was the most unfavourable for crop yields ever experienced in northwestern Saskatchewan. The snowfall during the winter of 1913-14 was very light. Spring opened up about the usual time. Seeding operations commenced on April 11. Typical April weather was experienced, with low temperatures, and more rainfall than in previous years. May was considerably warmer with a few small showers. The usual June rains did not materialize, and July and the first of August were warm and dry. During the last of July and the first part of August, hot winds prevailed, which did considerable damage to crops of all kinds. Considerable rain fell during September and first part of October, which, while too late to benefit the past season's crop, left the ground in good condition for ploughing, and for the succeeding season's crop operations. Total precipitation from April 1 to August 15 was 7·22 inches.

TESTS OF CEREALS.

The comparative test of varieties of cereals is one of the most important of the many lines of experimental work conducted on this Station.

In varieties of wheat tested, Marquis and Red Fife have again demonstrated their superiority. In the test of oats, Banner gave the heaviest yield, while Ligowo holds the record for three-year average. Victory, which had given such splendid yields in the two previous years, was accidentally omitted from the test. O. A. C. No. 21, and Manchurian are two of the most satisfactory varieties of six-row barleys. Duckbill, a two-row variety, has yielded remarkably well. The Arthur peas have proved to be earlier maturing and higher yielding than any other variety tested on the Station.

FIELD HUSBANDRY.

Crop rotation.—The crop rotations on this Station have not been under way for a sufficient period to warrant definite statements being made as to the relative merits of the different systems. Especially is this the case where the treatment calls for the application of barnyard manure in the rotation. A noticeable feature of this year's returns from the rotations was the fact that the check plot "A," continuous wheat, was the only system which was operated at a loss.

Rates of seeding.—In the amounts of seed per acre, a compilation of the results of the last three seasons' tests points to the conclusion that less amounts of seed than are commonly used of oats and barley will prove more profitable. One bushel per acre of each of these kinds has given higher yields than any other amounts tested.

CULTURAL PLOTS.

The scope of the cultural investigation work has been considerably augumented by the addition of eight experiments.

A few conclusions might be drawn from the four experiments that have been under way for two years.

Use of soil packer.—In the use of soil packers, sufficient evidence has accumulated to indicate that packers are of considerable value in the preparation of the seed-bed, providing, however, that they are not used where the surface soil contains a high percentage of clay, or when the soil is too wet. The most profitable times to use the soil packer appear to be immediately after ploughing and immediately after sowing.

Breaking new sod.—The experiments in methods of breaking the prairie point to the conclusion that ploughing the sod 4 or 5 inches deep, early in June, and cultivating throughout the season, is the most profitable system to adopt.

Depths of seeding.—In the depth of seeding experiment, sowing from 2 to 3 inches deep appears to be the most satisfactory for both wheat and oats.

HORTICULTURE.

Considerable progress has been made in connection with the horticultural work of this Station. A splendid catch of Kentucky Blue grass on the lawn has been the admiration of visitors. The trees and shrubs, planted in groups on the lawn, are thriving. Each year's growth adds considerably to the effect. A number of trees in the arboretum have proved somewhat tender, but a long list of varieties have shown themselves quite hardy.

In the flower border, the paeonies have made a splendid start. Besides the annual flowers, which were sown in the hotbed, and transplanted to the flower border, twenty-seven varieties of annuals were sown outside, most of them blooming splendidly.

Vegetables.—The dry summer seriously affected the yields of vegetables, potatoes only yielding about half an average crop. Corn, cucumbers, and tomatoes were just commencing to bear when the frost came.

LIVE STOCK.

The live stock on the Station at the present time consists of fourteen head of work horses.

Experimental work has been restricted to investigations into the cost of wintering idle work horses, and the cost of raising colts, the average cost of feed for two 3-year-old colts, from time of weaning until three years old, amounting to $56.24.

EXTENSIONS TO THE STATION.

One-half section (320 acres) of land, adjoining the Station, has been purchased for the purpose of extending experimental work in crop production, and providing sufficient feed for further experimental work with live stock.

About 100 acres of new land have been broken up during the past season.

BUILDING AND FENCING.

A comfortable cottage has been built for the farm foreman. The fence around the Station has been neatly painted, and the land purchased has also been fenced. In all, approximately 2½ miles of woven wire fencing have been erected.

EXHIBITIONS.

In conjunction with the Rosthern Station, an exhibit was staged at the Saskatoon Summer Fair.

VISITORS.

Nearly 900 people visited the Station during the past year. An excursion of farmers from the surrounding district visited the Station in July.

MEETINGS ATTENDED.

Since his appointment in August, the acting Superintendent has attended the Superintendents' conference in Ottawa in January, addressed meetings at twenty-two points in southern Saskatchewan, in connection with the Patriotism and Production campaign, and has spoken at a number of local Farmers' Institute meetings. He also assisted in the selection and laying out of a few of the Illustration Stations in the southern part of the province.

SOME Weather Observations taken at Scott Experimental Station, 1914-15.

Month.	Temperature F.			Precipitation.				Total Sunshine.
	Mean.	Highest.	Lowest.	Rainfall.	Snowfall.	Total.	Heaviest in 24 hrs.	
1914.	°	°	°	Inches.	Inches.	Inches.	Inches.	Hours.
April	37·8	76·5	9·1	1·36	....	1·36	·48	184·5
May	49·0	82·0	18·4	1·05	1·0	1·15	·22	295·4
June	56·9	85·0	34·1	2·37	....	2·37	·46	211·4
July	67·0	96·8	35·2	1·80	....	1·80	·95	309·0
August	59·5	90·5	30·2	1·41	....	1·41	·55	235·1
September	55·2	80·0	28·2	3·46	....	3·46	2·20	192·8
October	41·13	70·1	18·2	3·17	....	3·17	1·75	143·7
November	23·69	51·8	—17·3	....	6·0	·60	·60	100·4
December	2·57	24·8	—23·3	....	18·0	1·80	·60	26·3
1915.								
January	1·49	31·8	—42·0	....	1·0	·10	·10	89·0
February	13·27	30·2	—10·8	....	1·5	·15	·10	111·5
March	41·1	44·8	— 4·8	..	·5	·05	·05	216·7
Total for year	....	....	....	14·62	28·0	17·42	....	2,115·4

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

THE SEASON.

The season of 1914, on account of the very severe drought, will long be remembered as the most trying since settlement has taken place. In some localities, 1910 was just as unfavourable, but the areas affected were more restricted. The rainfall was a little greater near the foothills country on the west and along the Aldersyde branch of the Canadian Pacific railway from Carmangay northwest, but over the balance of southern

Alberta the precipitation was so light that absolutely no grain crops were obtained except on well summer-fallowed fields, and the yields in these cases were, of course, very light. Although it is most unfortunate that the district has had to experience such a lamentable disaster as a practical crop failure, still, one advantage is gained which is that the farmers are brought face to face with the fact that summer-fallowing must be practised on a very much greater scale than has been the case in the past, if similar failures in the future are to be avoided.

In regard to the amount of moisture carried in the soil from 1913 it might be said that the precipitation during the last four months of that year was light, amounting in all to only 2½ inches. During this period, heavy drying winds were prevalent, with little or no snow on the ground, so that the soil moisture was severely drawn upon. To counteract this in a measure, however, 3·63 inches of precipitation was received during the first three months of this year, i.e., January, February, and March, so that the soil was reasonably moist and in excellent condition when work on the land was started.

The first discing, harrowing, or seeding on the Station occurred March 17. The ground froze up toward the latter part of March but opened again shortly, and seeding was begun April 4. Unfortunately, the rainfall during April, May, and until the latter part of June was very much less than usual. For this entire period no soaking rain was experienced. What did come was in the form of light showers that were not sufficient to wet through the dry layer of 2 or 3 inches at the surface and connect with the moisture lower down. The fact that the total precipitation for April and May was only 0·83 of an inch fully illustrates how serious conditions were and how difficult it was to obtain a stand from seeds when sown. A wet spell during the last ten days of June revived things generally, but the dry, hot July was too severe a strain on plant life. Corn, late-sown roots, and potatoes, which were able to profit by the August rains, gave reasonable returns, although they, of course, did much better on summer-fallow. The last frost in the spring occurred on May 12, when a temperature of 29·8° F. was recorded. The first frost in the fall was on September 15, when the temperature dropped to 31·0° F.

CROP YIELDS.

Non-irrigated.—All crops except those sown on summer-fallow and corn land were a practical failure. Field lots of spring wheat sown on summer-fallow averaged a little over 15 bushels per acre, and winter wheat, 14 bushels. The yields of oats and barley were in proportion. Peas and oats sown as a mixture on summer fallow for green feed gave a return of 1 ton and 500 pounds per acre of field-cured hay. The yield of wheat after corn in one of the rotations was greater than wheat on summer-fallowed land. This is rather remarkable considering the extremely dry season, and indicates the possibilities of the dry-land farmer producing a good supply of winter fodder on land that otherwise would be in fallow and returning nothing. Hay, including alfalfa, clover and grasses, failed to make sufficient growth to be worth cutting, except alfalfa in rows, which gave light returns.

Irrigated.—The yields of grain were fully up to the normal. All kinds of hay gave returns slightly in excess of those obtained in 1913.

EXPERIMENTS IN ROTATION OF CROPS.

Non-irrigated.—The necessity of having a summer-fallow introduced every second or third year in the crop rotations was fully emphasized. There are now seven rotations laid out on the dry part of the farm. In addition to these, there is really an eighth one comprising an experiment to test corn planted in hills 3 feet each way, and potatoes similarly planted as a substitute for summer-fallow. The variety of corn used is the Squaw, which is the only variety which can be relied upon to ripen each year here. In this experiment, which was only started this year, the corn planted on spring ploughed stubble yielded at the rate of 16 bushels and 20 pounds of shelled corn per acre. This is most encouraging when the severe drought conditions are considered.

Irrigated.—On the irrigated part of the Farm there are now three rotations established.

The value of using alfalfa in a rotation is well illustrated by the yields obtained in rotation U, which is a ten-year rotation consisting of six years alfalfa, one year each of hoed crop, wheat, oats, and barley. The average yield of cured hay from the six fields of alfalfa, including the field freshly seeded this year, from which no crop was obtained, was 4 tons and 168 pounds per acre. The total yield of potatoes was 598 bushels (of these, 583 bushels and 25 pounds were marketable); wheat, 63 bushels 30 pounds; oats, 107 bushels; and barley, 46 bushels. The field in which the barley was grown this year has not been in alfalfa on account of the rotation not having been established long enough, otherwise the yield would doubtless have been larger.

SOIL CULTURAL EXPERIMENTS.

The cultural investigation work started in 1911 consists of thirteen lines of experiment. Except on summer-fallow, the yields of grain were practically nil. The drought was so severe that there were no very marked differences between the various treatments given, at least none that deserves special mention.

CEREALS.

The usual variety tests of wheat, oats, barley, and peas were carried out on both the irrigated and non-irrigated land. The yields on the non-irrigated land were all relatively low. There does not appear to be much difference in the yield between Red Fife and Marquis. There is considerable interest taken in the Prelude, but as the seasons in southern Alberta are such that difficulty is rarely experienced in ripening either the Red Fife or Marquis, there would appear to be no advantage in using the Prelude, owing to its much lower yield.

FORAGE CROPS.

Corn raised for fodder did particularly well. The late rains during August brought it on rapidly. In the variety test on non-irrigated land, two of the seven varieties tested yielded at the rate of over 13 tons of fodder per acre (weighed green), and on the irrigated land North-western Dent yielded 26 tons, and two other varieties over 24 tons per acre. The maturity was good, as a few ears on one or two of the varieties ripened.

Turnips, mangels, and carrots did not give particularly good returns owing to the fact that heavy winds prevailed when the plants were coming up, and during thinning time, the result being that drifting soil destroyed many of the young plants, thus injuring the stand.

Hay on the dry land did not grow high enough to be worth cutting, except alfalfa in rows. The yield of alfalfa seed was poor.

On irrigated land the yield of hay, particularly alfalfa, was good, and the dry season made it possible to save it in excellent condition.

HORTICULTURE.

The season was quite favourable for horticultural work. A large number of apples fruited, but the total amount of fruit was not so great as last year owing probably to severe winds at blossoming time preventing the fruit setting as well as it otherwise might. The currants produced much better than usual. The raspberries did fairly well, but the strawberries yielded less than they usually do. This was attributed to a light-frost that came when the plants were in bloom. The berries were smaller than usual, and many were misshapen.

INSTALLATION OF A PUMP FOR IRRIGATION.

One of the main distributing laterals of the Canadian Pacific Railway irrigation system passes through the Station. There is a certain amount of land lying adjacent to this lateral that is too high to be irrigated by it, though nominally "below the ditch." By using a pump and lifting the water 6 to 7 feet it was possible to irrigate this land. In the spring of 1914 a 9-inch suction and 7-inch discharge rotary pump was installed. This was operated by our 20-h.p. gasoline farm engine, and proved to be quite successful. Data as to the cost of operation are being collected.

LIVE STOCK.

No breeding stock is kept on the farm up to the present time.

Winter feeding experiments were carried on with both steers and lambs.

Eighty-four head of 2- and 3-year-old steers were divided into four lots. They were all given the same amount of grain—ground barley—but different kinds of roughage. Lot I, alfalfa; lot II, alfalfa and green oat sheaves; lot III, green oat sheaves; and lot IV, dry corn fodder and alfalfa. A small profit was realized on each lot.

Four hundred and eighty head of range lambs were purchased and put on feed. They were divided into two lots, both lots receiving the same quantity of grain (mixed barley and oats in equal parts, whole) but lot I was fed alfalfa and lot II alfalfa and green oat sheaves. Lot I returned a profit of $1.04 per head, and lot II, $1.37 per head.

POULTRY AND BEES.

Work with poultry was started this year. No fowls were obtained in the spring, but eggs from the Experimental Farms at Ottawa, Agassiz, and Lacombe, as well as some purchased locally, were used for hatching. Owing to unsatisfactory quarters for the incubators and the long distance that most of the eggs had to be shipped, the percentage hatched was not very high. Over 400 chicks in all were reared. One hundred of the best pullets were saved, and 100 hens were purchased. The winter egg production was quite satisfactory. All the pullets are being carefully trap nested. During last spring and summer a very satisfactory start was made in regard to buildings for poultry work. The work for the season of 1915 is starting out quite propitiously, with a fair hatch of rather early chicks.

The man in charge of the poultry is also looking after the bees. At present we have only two colonies. Honey was extracted from one of these, the other was weak owing to the queen dying during the winter previous. The amount obtained was 100 pounds. Work along this line will be extended as soon as it is possible to increase the number of colonies.

BUILDINGS.

A six-roomed cottage for the gardener was erected during the summer. An addition connecting the implement shed to the barn was put up. This will be fitted up for a granary, and part of it will be used for a carriage room. A poultry administration building, a brooder house, and two portable colony houses were erected in connection with the poultry department.

MEETINGS AND CONVENTIONS ATTENDED.

The Superintendent attended the Western Canada Irrigation Association Convention at Penticton, B.C., and the National Irrigation Congress at Calgary, when he acted as one of the judges at the exhibition held in connection therewith. He judged the gardens for the Taber Horticultural Society, and assisted in judging at the Provincial Seed Fair. He addressed meetings on irrigation at Iron Springs, Coalhurst, Purple Springs, and Orton; addressed a meeting of the members of the local U.F.A. at Cowley and the Horticultural Society at Calgary, besides meetings at the following places in connection with the Patriotism and Production campaign: Calgary, Vulcan, Carmangay, Lethbridge, Warner, Raymond, Magrath, Pincher Creek, Stavely, High River, Gleichen, Strathmore, and Medicine Hat. He was a delegate at the organization of the Rural Development League at Olds.

VISITORS.

Each year sees an increase in the number of people who visit the Station. Among these are farmers from all parts of the southern part of the province.

METEOROLOGICAL TABLE.

Month.	Temperature F.			Precipitation.	Sunshine.
	Maximum.	Minimum.	Mean.		
1914.	°	°	°	Inches.	Hours.
April	68·1	16·0	42·4	0·54	195·2
May	79·0	21·2	51·25	0·29	318·9
June	92·0	34·1	58·4	2·48	208·5
July	93·9	40·0	67·5	0·93	386·2
August	97·0	35·4	62·08	3·59	295·0
September	86·0	31·0	52·8	1·07	221·4
October	85·5	20·1	42·88	2·17	137·6
November	66·0	— 8·0	35·7	0·63	89·8
December	42·0	—23·5	9·46	1·19	115·0
1915.					
January	52·0	—26·5	17·06	0·5	112·4
February	47·2	— 4·0	19·98	0·94	126·3
March	67·2	1·8	28·67	0·22	164·5
Total	.....	.....	.....	14·55	2,370·8

EXPERIMENTAL STATION, LACOMBE, ALTA.

The season of 1914 at Lacombe was favourable for the production of general farm crops as well as fruit and vegetables. The precipitation for the months of April to August, inclusive, totaled 9·905 inches, and was ample for the needs of crops. The last spring frost occurred on May 29, but resulted in no serious injury even to fruit blossoms. The earliest frost in the fall came on September 1, and was severe enough to injure corn.

LIVE STOCK.

The horses number twenty-one, cattle ninety-four, hogs thirty-nine, and sheep nineteen.

An outbreak of black-leg occurring in the spring of 1914 resulted in the loss of seven head of cattle. This outbreak was particularly virulent and did not confine itself to young cattle, but caused the death of several breeding cows 5 years old and over. Vaccination of the entire herd was completed as quickly as possible after the disease was diagnosed, and was repeated in six months. No loss has been sustained since the first outbreak.

The feeding trials with beef and dairy cattle were of special interest. Six groups of steers were fed for beef. The primary purpose of the experiments was to test the various forms of shelter, and one group of steers was fed in the brush, one in the corral, and one in the barn. These were fed prairie hay and grain. Three other lots of steers were fed in the barn and checked against those receiving prairie hay. These three groups were fed: (1) green sheaves, (2) silage with straw, and (3) timothy hay. The conclusion reached in reference to shelter is that no buildings are necessary in order to feed steers successfully. The steers in the corral made the most economical gains, those in the brush next, and those in the barn the most expensive gains.

When comparing the results secured from the different fodders, we find that prairie hay fed in the corral stands first in economy of gains; green feed fed in the barn, second; prairie hay fed in the brush, third; prairie hay fed in the barn, fourth; ensilage and straw fed in the barn, fifth; and timothy hay fed in the barn, sixth and last.

All the cattle were sold on March 3, and when killed showed a dressed weight of almost 60 per cent off car.

Different rough fodders were fed to dairy cattle for a period of twenty weeks, in two-week periods. The results indicate strikingly the advantage of silage for the economical production of butter. Since these trials are the first, in the West at least, where an opportunity has been afforded to compare the nutritive value of oat silage with other fodders available here, the figures secured in this test, which include the entire dairy herd, should be of value to dairymen.

It is also of interest to note the daily average production of the three dairy herds at this Station.

Similar conditions surrounded the animals, and similar feeds were fed in each case, and the extremes of production shown are 3,011 pounds and 13,768 pounds. If breeding along definite lines for a few generations will bring such results as are indicated in this table, surely every breeder of dairy cattle should decide to give steady direction to his efforts towards improvement.

SWINE.

The herd of swine has now reached proportions that permit of more experimental feeding being conducted. Five groups of hogs were fed for market during the year, and the figures secured show the net profit to be 2·88 cents per pound, figuring grain at 1 cent per pound. Feeding trials have been conducted to determine the value of frosted wheat *versus* oats and barley and skim-milk, and also the best ration for pigs following weaning.

HORTICULTURE.

For the second year in succession, apples have been produced from various varieties of cross-bred apple trees. This is encouraging as it supports the expectation that if cross-bred apple trees can be carried through several successive winters, certain selections of standard apples may also be grown. To this end about 6,000 apple seedlings are being grown, and from among this number it is hoped a variety will be found which will prove both hardy and satisfactory as to size and quality.

A large amount of tree planting in the grounds has been done during the year. This planting is now having its effect on the general appearance of the Station, and as it is now practically complete, nothing remains but to await the development of the trees and shrubs. When they have had two or three more years of growth the grounds should present a very creditable appearance.

ROTATIONS.

The rotation work is providing interesting information. The six-year rotation known as rotation "K" is giving very satisfactory results, and is being used in a modified form on the larger fields of the new farm. Here this rotation runs as follows: Hay, manure in winter, twelve tons per acre; pasture; pasture till July and August, plough 6 inches deep and fall work; wheat or oats; oats; barley and seeded down.

This rotation produced a profit last year over all operation costs of $7.60 per acre, or interest at 7 per cent on the land capitalization of over $100 per acre.

SOIL CULTURAL EXPERIMENTS.

Work in this connection is being carried on with the 500 plots as originally planned. Results now known to be of value have been secured in the "depth of ploughing" experiment, "summer-fallow," "stubble treatment," and "seeding to grasses and clover." It may also be possible when additional results have been obtained to secure informative material from other of these experiments.

POULTRY.

This Station has 253 hens, 22 ducks, 9 geese, and 22 turkeys.

Experiments have been conducted during the year as to the comparative merits of the different types of houses: First, for warmth; second, for egg production; third, as to hatchability of chicks from eggs produced therein. The results are not as yet conclusive, but indicate that the least expensive house may prove quite equal in efficiency to the more elaborate types.

BUILDINGS AND IMPROVEMENTS.

A new office building was erected which provided much-needed accommodation for the rapidly increasing office work in connection with this Station.

Over 2 miles of wire fence was erected, and alterations were made in a number of the buildings. The cattle barns were painted inside, the horse barn was sheeted inside, and the windows in the straw poultry house altered and adjusted to permit of better ventilation. A new corral was built to accommodate a larger number of feeding steers, and a number of colony houses were erected in which to winter the brood sows and to carry on feeding experiments.

FAIRS.

This Station assisted in putting on an exhibit illustrative of the work of the Experimental Farms system at the following exhibitions: Cargary, Lethbridge, Medicine Hat, Red Deer and Lacombe.

MEETINGS ATTENDED.

The Superintendent addressed a Farmer's Convention held by the Board of Trade, North Battleford. He spoke on the subjects "Grading up a Dairy Herd" and "Food Stuff available for Alberta Dairymen," at two sessions of the short course in agriculture held by the Board of Trade, Calgary. He was one of the speakers at seventeen meetings held in central Alberta in connection with the "Patriotism and Production" campaign. He spoke before the Provincial Dairymen's Association at Olds on

"Grading up a Dairy Herd." He attended a Conference of Superintendents with the officers of the Experimental Farms system in Ottawa in January. He acted as judge of cattle, sheep, and swine at the Provincial Winter Fair, Calgary, of sheep and swine at the Calgary Industrial Exhibition and of dairy cattle and swine at the Brandon Exhibition.

Meteorological Observations at Lacombe, Alberta, 1914-15.

Month.	Maximum.	Minimum.	Date Maximum.	Date Minimum.	True Mean.	Precipitation.	Sunshine.
1914.	°	°				Inches.	Hours.
April	72·6	14·7	30th	2nd	40·1	·34	174·2
May	77·3	24·3	24th	6th	47·89	1·285	291·9
June	84·8	36·1	2nd	24th	55·81	6·07	218·7
July	87·6	39·3	3rd	29th	62·25	1·11	316·8
August	85·8	32·2	1st	31st	58·1	1·10	265·3
September	80·3	23·4	29th	16th	51·12	2·36	172·9
October	77·0	19·9	15th	22nd	47·1	·30	120·6
November	58·8	—18·1	3rd	16th	40·39	1·5	84·8
December	48·8	—19·1	17th	11th	11·3	·98	66·1
1915.							
January	40·8	—25·1	18th	26th	13·5	·295	70·0
February	42·8	— 6·6	15th	2nd	17·4	·025	109·8
March	64·8	— 1·1	22nd	4th	27·835	·075	163·9
Total	....	....	....	....	....	15·440	2055·0

EXPERIMENTAL STATION, INVERMERE, B.C.

THE SEASON.

The season of 1914-15 was on the whole an unfavourable one. The spring was backward, work did not commence on the land till April, and seeding not until the last week of the month. The continued cold weather and chilling winds prevented either field or garden crops making satisfactory progress. There was a fair amount of rain during the early summer, but August was a dry month, and much late irrigation was necessary. The irrigated plots gave satisfactory results, but the non-irrigated were only poor. Early frost in August destroyed many tender varieties in the garden. Harvesting operations were carried out in fine weather, and fall ploughing was possible up to November 7, when the last furrow was turned. The winter season has been a favourable one throughout, the land is in good condition, and the coming season promises well.

WORK CARRIED ON DURING YEAR.

The regular work in field and garden was carried on at the Station. In the department of field husbandry many of the experiments were set out with the idea of discovering to what extent irrigation is necessary, and how it is to be employed to be productive of the best results. These experiments were begun this last season, but being yet in their inception no definite data can be supplied.

A number of rotations will be given their second year's test in the coming season. These are chosen to meet the peculiar problems of the district, and are for both irrigated and dry farming. The land being deficient in humus, only fair yields were obtained last season of either cereals or roots. It is hoped, however, to demonstrate as time goes on, how judicious treatment of the soil will materially affect its productivity.

Among the horticultural experiments, the most important, in point of view of local needs, are those dealing with potatoes, the attempt being to determine one or two kinds which can be confidently recommended to settlers in the district. Thirty-seven varieties were tested both in 1913 and 1914, and the results were singularly uniform. Another year's tests will produce more definite data, but meanwhile, taking into consideration both quality and quantity of yield, the Wee McGregor, Sir Walter Raleigh, and Late Puritan seem to be among the best. Six early varieties were also tested. Planted on April 13, they all gave good yields when harvested July 16.

The bush fruits have made satisfactory growth, and the trees in the apple orchard, which made a good start, continue to do well. It is too early yet to make any statement as to the suitability of this district for apple culture, the experiments not being yet sufficiently advanced.

Avenues of Norway maples have been planted along the road bordering the south fence of the Station, and also along the north drive, and are doing well.

LIVE STOCK.

There are at present, on the Station, one heavy team for the regular work of the farm, one general-purpose horse, two milch cows, which give a sufficient supply of milk for all employed on the Station, and two steers which have been recently purchased to conduct feeding experiments with roots produced last season.

POULTRY AND BEES.

There are now four pens of poultry, one each of Barred Rock and Light Sussex, and two pens of White Leghorn. The birds have come through the winter well, and have given fair returns in eggs.

The incubators are now running, and the birds have been removed from their winter location, near the stables, to the large runs on the land to the west of the farm proper, on the slope of Tobey Creek. The three colonies of bees survived the winter. One was placed in the cellar and the others remained outside. They have now been removed to the new poultry runs.

BUILDINGS AND IMPROVEMENTS.

A convenient implement and tool house, 24 feet by 36 feet, has been erected on the Station, and a roothouse and storeroom, which also provides accommodation for the incubators and for testing eggs, has been built on the poultry grounds. An addition of two new poultry-houses has also been made.

The roads on the Station have been changed, in order to use the land to better advantage, and the main driveway now enters the Station grounds from the south, and a road runs east and west from the stables, across the northern part of the farm.

On September 7, the Dominion Cerealist visited the Station, and chose a tract of land in the southwestern part of the Station inclosure where a number of cereal tests will be commenced this season.

During the season the Superintendent has visited a large number of the farmers of the district who were anxious to obtain advice on some problem connected with the management of their farms. He also visited the Cranbrook Farmers' Institute meeting in January, and took part in the discussion there of "Marketing Problems" and "The Rotation of Crops." Now that the railway service has been extended through Invermere he expects to be able to do more along these lines.

Addition has been made to the stock of implements at the Station, by the purchase of a pulverizer, a hay carrier, and a reaping attachment for a mower.

METEOROLOGICAL REPORT.

Month.	Highest Temperature.		Lowest Temperature.		Total Precipitation.	Bright Sunshine.
1914.	Date.	°	Date.	°	Inches.	Hours.
April	30th	71	1st	22	1·25	165·1
May	16th	87	6th	28	1·46	237·1
June	18th	85	6th	34	1·59	98·4
July	31st	95	16th	42	1·57	314·5
August	1st	95	31st	33	·75	267·9
September	2nd	80	30th	33	2·16	148·3
October	16th	66	22nd	24	·77	86·7
November	25th	51	15th	3	·79	56·4
December	2nd	35	15th	—16	·42	86·8
1915.						
January	11th	36	21st	—15	·51	46·0
February	17th	44	14th	— 1	·30	70·9
March	21st	63	26th	12	·03	175·8
Totals					11·60	1853·9

EXPERIMENTAL FARM, AGASSIZ, B.C.

THE SEASON.

The season of 1914 was a good one for crop production. The total rainfall was considerably below that of the previous year, but was more favourably distributed. Seeding operations were begun in good time in April. July and August were very dry, only ·75 inches of rain falling in the two months. Heavy rain fell in October and through November, which made the harvesting of roots and corn somewhat more difficult. The winter was very mild; no snow has fallen during the entire year.

METEOROLOGICAL TABLE.

MONTHS.	Maximum Temperature.		Minimum Temperature.		Mean Temp.	TOTAL PRECIPITATION.			
						Rain.		Sunshine.	
1914.	Date.	°	Date.	°	°	Inches.	Days.	Hours.	Mins.
April	21	72	1	31	51·55	2·94	28	143	54
May	22, 15	85	4	36	56·28	3·55	24	202	
June	15	87	4	39	52·91	5·18	26	176	18
July	17	87	6	40	62·075	·15	27	246	54
August	19	87	3	44	62·995	·60	28	224	30
September	23	78	25, 27, 30	40	52·33	6·29	18	60	39
October	15	71	4	34	50·4	7·53	24	111	30
November	1, 28	52	16	28	42·6	14·72	13	36	18
December	2, 8	49	21	16	35·235	·53	21	80	18
1915.									
January	20	53	26	16	37·065	7·17	17	69	30
February	20	55	14, 19, 26	28	41·02	5·67	23	69	30
March	21	73	9, 19	30	48·11	2·45	26	131	24
Totals						56·78	275	1552	36

The following crops were grown for stock-feeding:—

	Tons.	Lbs.
Corn silage	211	710
Clover silage	124	
Mangels	84	1,450
Turnips	6	155
Carrots	3	1,520
Sugar beets	. . .	1,820
Potatoes	9	1,200
Mixed grains	15	753
Barley	1	356
Oats	1	782
Peas	....	1,200
Clover hay	82	800

A large block of land has been carefully prepared for permanent cultural and fertilizer experiments, and has been divided into 205 plots. Part of these will be devoted to a four-year rotation, the rest to experiments with the various fertilizers, natural and artificial. This land has been under preparation since 1911, and is now in fit condition for experimental work.

A considerable amount of labour has been devoted to fencing and draining. Nineteen hundred feet of new fence has been erected. The main ditch at the back of the Farm has been cleaned out and put into good condition.

Some 14 acres of land have been cleared and prepared for crop. The figures on the cost of these operations and the methods employed are useful, and will be found in the special report on Field Husbandry.

During the whole year the force of working horses has been kept busy, either at the ordinary field work or at fencing, land clearing, etc. Work horses alone are kept on this Farm, so there is no experimental work to report. Figures have been collected, however, on the cost of keep of heavy and light draught horses. Two of the old horses, which were worn out, were destroyed, and three heavy draught colts were purchased at the close of the year.

With the Holstein-Friesian herd, the breeding work has been continued with the same objects as hitherto. Some of the older grade cows have been culled out, as falling below the improved standard of the herd. As a result of the high prices of food, the profit per cow was low as compared with last year, though the yield was a little larger. Of the calves born, 68 per cent were heifers, as compared to 50 per cent last year. The cows have kept healthy, and there have been no losses from death.

Some feeding experiments were conducted with the object of testing the relative values of certain foods for cows and calves; also with clover silage for dairy cattle. The results of these will be found in the special report on dairy cattle for this Farm.

In the breeding herd of Yorkshire hogs there are now thirty-three head: two stock boars, twenty-five mature sows, and six young sows. The performance of the sows was quite up to standard, and the litters produced were strong and healthy.

Figures were collected on the cost of up-keep of boars (aged and young) for one year, and also the cost of raising young brood sows to one year of age. Since the price of foods is relatively high, these figures should constitute a safe estimate.

Last year some experimental work on rice meal, as a food for swine, was reported. The work has been continued on a large scale this year, with good success. It would appear from the results of a large number of trials, that the injurious effects of rice meal can be counteracted by the addition of phosphorus to the ration.

The flock of Dorset Horned sheep has shown considerable improvement in performance during the past year, following the severe culling and the addition of new blood in the shape of an imported ram. Lambing is at present in progress and so far the ewes have given 200 per cent lambs, all of which are strong and healthy.

The poultry work has been increased, and some useful results have been obtained in the experimental work. As heretofore, only two breeds of fowls have been kept, viz.:

Barred Plymouth Rocks and White Leghorns. In addition to these, however, a start has been made with ducks and some homer pigeons have been secured, with the object of raising squabs.

The farm dairy has been enlarged and repaired, and the facilities for cheese making improved. The work is in charge of Miss R. Keene. The number of outside samples sent in for testing has greatly increased during the year.

In the variety tests of cereals the following general results were obtained: Wheat, owing to the previous destruction of the crop by the "wheat midge" was discontinued. It appears, however, that the insect migrated to the barley in sufficient numbers to perpetuate the species.

Of the fifteen varieties of oats tested, Gold Rain gave the highest yield this year. Eighty Day was the earliest maturing, but the lighest yielder. Six varieties of two-row barley and eight varieties of six-row barley were tested. The yields were higher than last year. Of the two-row barley, Danish Chevalier came first, and Beaver second. Of the six-row, Trooper and Odessa headed the list.

Nine varieties of peas were grown, and though short in straw, produced an average crop of grain. The highest yielding variety was Solo, with 53 bushels per acre. Golden Vine and Prussian Blue were second and third, respectively.

The horticultural work, in charge of Mr. J. D. Brydon, consisted of an extensive series of variety tests with vegetables, the care of the young orchard of 4 acres, the variety testing of flowers and bulbs, and the care of the lawns and garden. Some useful notes were made on the ornamental trees and shrubs, of which there are a great number on this Farm.

The work in apiculture has been facilitated by the erection of a small bee-house and yard. This year, seven hives produced 375 pounds of honey, an average of 53·5 pounds per hive.

In the course of the year, 485 samples of potatoes were distributed. Of these, 265 or 54 per cent were reported on. Of the results obtained, 78 per cent were reported clean.

EXPERIMENTAL STATION, SIDNEY, B.C.

The spring season commenced early in April with fine weather and light showers of rain which gave promise of a good growing season, but on account of cool nights in April, May, and June, with fogs in the morning and only 0·27 inch rainfall during the months of July and August, results were on the whole only fairly satisfactory and some cereals sown the first week in June had to be cut in September for green feed.

The general harvesting was finished on August 12; threshing and baling straw was done in September. The samples of grains harvested and threshed were well up to standard, the yield being a fair average, considering the very dry season.

During the month of October, field roots and potatoes were lifted and pitted for storage (not for frost protection).

Seventeen varieties of potatoes were planted in October for a winter experiment, and on March 31, 1915, they all showed good growth.

Arlington Awnless barley and Thousandfold rye, sown in the month of November, were in full ear on March 31, 1915; red and crimson clover, sainfoin, alfalfa and swiss chard sown at the same time are a good catch. These all being now two years old here, demonstrate with other experiments in horticulture that acclimatized seeds are fully fourteen days in advance of new imports.

The temperature during the month of March, 1915, was very even, showing a variation from maximum to minimum of only 29 degrees. These conditions called for early spraying. Early plums, peaches, a few cherries and pear trees commenced to bloom March 15.

During the months of July and September, many visitors and societies visited the Station, their interest having been stirred by seeing and hearing of the good collection sent by the Experimental Station for Vancouver Island to the Vancouver Exhibition to supplement the exhibit from the Central Experimental Farm at Ottawa.

METEOROLOGICAL RECORDS.

Month.	Temperature.			Rainfall.	Sunshine.	
	Highest.	Lowest.	Mean.			
1914.	°	°	°	Inches.	Hours.	Mins.
April	68	34	50·38	1·63	172	
May	82	40	56·	·28	293	
June	83	38·5	58·50	2·14	281	4
July	85·5	44	64·23	·13	342	
August	83·5	46	62·36	·14	300	2
September	72	41·5	54·07	1·97	87	4
October	66	39	51·90	3·63	94	4
November	56	32	46·30	8·20	46	30
December	41·6	34	37·80	1·21	72	56
1915.						
January	49	27·5	38·50	2·77	70	4
February	51	31	41·60	1·66	65	9
March	64	35	47·	1·65	142	42
				25·41		

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EXPERIMENTAL FARMS

REPORTS FROM THE

DIVISION OF HORTICULTURE
DIVISION OF CEREALS

FOR THE YEAR ENDING MARCH 31, 1916.

PRINTED BY ORDER OF PARLIAMENT.

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

REPORT

FROM THE

DIVISION OF HORTICULTURE

For the Year ending March 31, 1916

PREPARED BY

The Dominion Horticulturist, Central Farm, Ottawa. - W. T. Macoun.

Superintendent—
- Experimental Station, Charlottetown, P.E.I. - - - - J. A. Clark, B.S.A.
- Experimental Farm, Nappan, N.S. - - - - - - - W. W. Baird, B.S.A.
- Experimental Station, Kentville, N.S. - - - - - W. S. Blair.
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- Experimental Station, Rosthern, Sask. - - - - - W. A. Munro, B.A., B.S.A.
- Experimental Station, Scott, Sask. - - - - - - - M. J. Tinline, B.S.A. (Acting).
- Experimental Station, Lethbridge, Alta. - - - - W. H. Fairfield, M.S.
- Experimental Station, Lacombe, Alta. - - - - - - G. H. Hutton, B.S.A.
- Experimental Farm, Agassiz, B.C. - - - - - - - P. H. Moore, B.S.A.
- Experimental Station, Invermere, B.C. - - - - - - G. E. Parham.
- Experimental Station, Summerland, B.C. - - - - R. H. Helmer.
- Experimental Station, Sidney, B.C. - - - - - - - Lionel Stevenson, B.S.A., M.S.

Experimentalists of Substations at Salmon Arm, B.C., Fort Vermilion, Grouard, Grande Prairie, and Forts Resolution, Providence and Smith, in northern Alberta,—also tests made at Hudson Hope, Peace River, B.C.

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REPORT OF THE DIVISION OF HORTICULTURE

OTTAWA, March 31, 1916.

J. H. GRISDALE, Esq., B.Agr.,
Director, Dominion Experimental Farms,
Ottawa.

SIR,—I have the honour to submit herewith the twenty-ninth annual report of the Division of Horticulture, being the eighteenth since I took charge of the Division.

There will be found included in this report, the reports of the work at the Central Farm, Ottawa, and those which have been written by the Superintendents of the Experimental Farms and Stations at Charlottetown, P.E.I.; Nappan, N.S.; Kentville, N.S.; Fredericton, N.B.; Ste. Anne de la Pocatière, Que.; Cap Rouge, Que.; Lennoxville, Que.; Brandon, Man.; Indian Head, Sask.; Rosthern, Sask.; Scott, Sask.; Lethbridge, Alta.; Lacombe, Alta.; Invermere, B.C.; Summerland, B.C.; Agassiz, B.C.; Sidney, B.C. There is also a report from Thos. A. Sharpe, Salmon Arm, B.C., and from the Sub-Station at Fort Vermilion, Peace River district, Alta.; Grouard, Lesser Slave lake, Alta.: Grande Prairie, Alta., and Fort Resolution, Fort Providence and Fort Smith in Northern Alberta. There is also a report of some tests made by Dr. Wm. Greene, Hudson Hope, Peace River, B.C.

The report of the horticultural work on the Central Farm has again been divided, as in the two previous years. The introductory and more general matter and some of the details with which I have had intimate association were prepared by myself, while most of the experimental work is reported upon by the assistants in charge of special parts of the work. The Assistant in Vegetable Gardening being still at the front, his work is being looked after by the Assistant in Pomology, who has prepared a report upon the work in Vegetable Gardening for the year.

BRANCH FARMS.

A considerable part of the writer's time, each year, is taken up in either visiting the Branch Farms and Stations, or in work connected with them at Ottawa, such as the ordering of material for them and arranging to ship supplies from Ottawa; and in editing the horticultural reports sent in by the Superintendents. There is also much correspondence with the Superintendents in regard to many things throughout the year. Every week the Superintendent sends a report to Ottawa giving an account of the work done the previous week, which enables the Horticultural Division to keep in close touch with the work. All records of horticultural experiments at the branch Farms and Stations are kept in duplicate and one copy is sent to the Central Farm each year when such data as are required for reference at Ottawa are copied on to cards, the whole forming a central card index system which makes it easy to refer to anything connected with horticulture at any of the Farms or Stations.

Following a meeting of the Superintendents at Ottawa in January, 1915, for the discussion of the work, I prepared a series of cultural experiments with vegetables, which it was proposed to carry out at all the Farms and Stations. These experiments were begun in 1915 and will be continued for from three to five years, and already very useful results have been obtained.

A visit to the western Farms and Stations was made in the spring of 1915, and again in the summer.

Agassiz.—Leaving Ottawa on March 23, I reached Agassiz, B.C., on March 27. Great improvements had been made in the grounds since the previous year. A number of poor old hedges had been removed, the old yard behind the house had been cleaned up and the grounds on the whole were in better condition. The trees and bushes in the farmers' orchard looked well, though a few Rome Beauty apple trees were already showing the Apple Tree Anthracnose which caused so much injury in the old orchard. It was suggested that the trees of this variety be removed and be replaced by another sort. Agassiz was visited again on August 18, when the improvement noticed in the appearance of the ornamental grounds was again marked. It was suggested at this time that a number of old shrubs on the west side of the house should be removed to still further improve the grounds. At this time the various experiments under way were gone over with the Superintendent.

Sidney.—The Experimental Station at Sidney, B.C., was visited on March 29, and succeeding days. While there I made a detailed planting plan of a 6-acre orchard for walnuts, persimmons, and chestnuts, also a plan in detail of the north arboretum border, also plans of fig, filbert, and pomegranate plantations, and a small vineyard, as well as one for miscellaneous economic plants. I also planned the planting of the banks of the pond on both sides of the bridge on the main avenue. It was also arranged to extend the planting of trees on the East Saanich road towards Sidney by the use of oriental plane trees. The trees and bushes in the various plantations made in 1914 were found to have become well established on the whole. Paths were staked out through the woods below the East Saanich road. On a second visit to the Sidney Station on September 11, I discussed with the Superintendent the possible desirability, in view of the many picnics which would probably be held at the Station in the future, of clearing out the underbrush in, at least, part of this grove, the first plan being to leave the woods in as natural a condition as possible. While at Sidney, it was arranged to send some tulip bulbs grown at this Station, to a number of the Eastern Stations for comparison with imported bulbs, looking to the possibility of ultimately supplying the whole Farms system with bulbs grown at the Sidney Station.

Summerland.—On April 7, I visited the new Experimental Station at Summerland, B.C., and went over the ground of the proposed horticultural plantations. An extensive series of cultural experiments bearing particularly on problems of irrigation had been planned in the winter, and the area where these were to go was chosen on the bench just below where the buildings are to be, the variety tests being elsewhere. As there was no water available at planting time, it was decided to defer the main planting until the spring of 1916, but a few apple trees were set out to test planting without irrigation. It was planned to have the ornamental grounds extend from the Canadian Pacific Railway bridge along the edge of the ravine to opposite the site chosen for the Superintendent's house. This should, in time, be a very striking feature of the Station, as the ravine at this point is very deep and rugged. A further area south of the grove below the Canadian Pacific railway was planned for the testing of ornamental trees and shrubs. I was again at Summerland on August 14, when further plans for future planting were made with the Superintendent, since spring flumes had been constructed and water for irrigation made available. I spent some time with the Superintendent in visiting the fruit district about Summerland and learning as much as possible about horticultural conditions there.

Invermere.—On April 9, the Invermere Station was visited. Most of the trees, shrubs and herbaceous plants were found to have wintered satisfactorily. At this time I planned, with the Superintendent, the site of the ornamental hedges, decided on the varieties, and ordered most of them. A plan of the ornamental grounds was also decided upon, and arrangements made for the seeding down to lawn grass of areas in front and at the side of the Superintendent's house. While at Invermere, neighbouring places were visited to obtain further information as to what things were succeeding in this district. Invermere was again visited on August 10 to 12, when some further plans were made with the Superintendent in connection with the horticultural work. These included a long perennial border extending along the side of the road from the main entrance to near the Superintendent's house; a long hedge separating the ornamental grounds from the fields was also suggested.

Lethbridge.—The Experimental Station at Lethbridge, Alta., was reached on April 12, 1915, when the various plantations were gone over with the Superintendent. A new orchard on the part of the Farm near the railroad for the seedling apple trees being grown in nursery rows was arranged for. Out of several thousand seedlings of Russian apples grown at this Station, it is expected that something very suitable for the climatic conditions of southern Alberta will be obtained. A group of spruce and cottonwoods was planned east of the entrance, and groups of *Syringa villosa, Spiræa arguta,* and *Cornus alba sibirica* along the east side of the road from the entrance as part of the planting scheme for the new lawn. On August 7, I was again at Lethbridge, when the horticultural area looked well. A number of varieties of apples, including Yellow Transparent, Duchess of Oldenburg, Lowland Raspberry and Charlamoff were fruiting. Some 2,000 seedling apple trees had been set out on the area above mentioned, most of which had grown. The trees and shrubs which are planted along the different boundaries of the Farm as an arboretum being difficult to look after under the present arrangement, and the hardy and tender sorts now having been determined, it was suggested that within a reasonable time and after full notes had been taken these rows of trees and shrubs should be taken out and a compact arboretum of the hardy varieties established of about an acre in the southeast corner of the Farm.

Lacombe.—The Experimental Station at Lacombe, Alta., was visited on April 13. It was decided, on consultation with the Superintendent, that it would be desirable to leave most of the seedling apple trees in the original rows in the orchard and let them fruit, if they will, in these rows. The willow hedges are now making much-needed windbreaks for the orchards here. An extension of the gooseberry plantation was decided upon. Some new groups of trees and shrubs were planned on the ornamental grounds and a laurel-leaved willow hedge was planned along the road between the barn and the new office, making with the present laurel-leaved willow hedge an additional protected area for vegetables. Lacombe was again visited on August 6, when a marked improvement was found in the appearance of the horticultural area over last year. At this time it was planned to run a flower border in front of the new laurel-leaved willow hedge above mentioned.

Scott.—On April 15, I was at the Scott Experimental Station and went over the plantations with the Acting Superintendent. The using of Manitoba plum seedlings as fillers between the apple trees in the orchards was suggested. An extension to the strawberry plantation was decided upon. Places were marked for additions to groups of trees and shrubs on the lawns. Scott was again visited on August 5. Considering the few years this Station has been established, the development in horticulture has been very great. A few crab apple trees are already fruiting. Horticulture at this Station is already attracting much attention in the district.

Rosthern.—A visit was paid to the Rosthern Station on April 16. It was decided at this time to leave most of the Russian seedling apples to fruit in the original rows, if they prove hardy enough, thinning out the tenderer ones as may be necessary. An extension to the plum orchard was planned. Additional sample hedges were decided upon. I was at Rosthern again on August 4, when the experiments in progress were gone over with the Superintendent.

Indian Head.—I spent April 17 at the Indian Head Farm. At this time plans were made for filling the vacancies in the various orchards. It was planned to remove every two rows of the Russian apple seedlings after this year, leaving the rows 9 feet apart and let the trees fruit in the remaining original rows. An extension to the gooseberry plantation was decided upon. Experiments with different lawn grass mixtures were suggested for the small area behind the office. It was arranged to widen the main entrance by removing several rows of trees from the forest belt on both sides and to continue the ash avenue outside the Farm to meet the maple avenue inside. A laurel-leaved willow hedge was planned, to run from the office to the hothouse on the south side of the present row of maples and poplar to make a better background for the flower border. On August 3, I was again at Indian Head and discussed the horticultural work with the Superintendent. It was suggested at this time to plant a Caragana hedge on three sides of the new four-acre area to be devoted to fruits and vegetables. A few additional flower beds were planned for near the Superintendent's house to give more colour during the summer months.

Brandon.—The Brandon Farm was visited on April 19, when the various plantations were gone over with the Superintendent. The situation of the orchard at Brandon is particularly trying to apple trees and there are few trees of the Russian apple which have proved so hardy in some parts of Manitoba that are hardy here. The Russian apple seedlings, of which several thousand are growing at each of the prairie Farms, have killed back worse here than at the other Farms. It was decided to remove three of the poorest sample ornamental hedges. I was again at Brandon on August 2, when the horticultural work was discussed with the Superintendent.

Morden.—The new Experimental Station, Morden, Man., was visited on April 20, when it was arranged to have *Caragana arborescens* and laurel-leaved willow hedges planted in a ten-acre field for protection for fruit trees, which were to be planted in 1916. The material for these hedges was ordered by me and they were planted during the spring. When at Morden again on July 30 and 31, I found that they had become well established. The Caragana hedges were planted 90 feet apart east and west in the field. A good many seedlings had grown from seed of Caragana, Manitoba maple and green ash, which had been sown in the spring.

Kapuskasing.—The internment camp at Kapuskasing, Ont., was visited on May 22 and 23, to get a better idea of the horticultural possibilities of this part of Ontario preparatory to starting work on what will be an Experimental Station. This situation seems as favourable for fruit and vegetables as any which could be obtained in the clay belt. There is good drainage for the soil into the river which flows past the Farm. After visiting Kapuskasing, seeds of different kinds of vegetables and flowers were sent there for test. I was again at Kapuskasing on September 17-19, and took notes on the results obtained from sowing this seed. A site for the first orchard and fruit plantations was selected, and on my return to Ottawa material for these was shipped there.

Spirit Lake.—The internment camp at Spirit Lake, Que., was visited on May 21, when arrangements were made for the testing of vegetables and flowers, as at Kapuskasing. The soil at Spirit Lake will, it is believed, be very suitable for tree fruits on certain parts of the Farm, which is sandy and stony. Spirit Lake was again visited on September 20-22, when notes were made on the growth of things which had been tested during the season. A supply of fruit trees and bushes was sent there on my return.

Cap Rouge.—The Experimental Station at Cap Rouge was visited on June 8, and again on October 21, when the various experiments which are being carried on at this Station were gone over with the Superintendent. The orchards at this Station are now beginning to bear, and very interesting results have already been obtained in many lines of work. In view of some loss last winter from root-killing on the top of the hill in the orchard where the snow blows off easily, it was suggested to mulch the ground about the trees with straw in future, or until the trees hold the snow more.

Ste. Anne de la Pocatière.—The Ste. Anne Station was visited on June 9, and October 20. Fruit trees for an additional area of about three acres had been ordered by me and these had been planted. The plantings of the two previous seasons had become well established and there is now an orchard of about ten acres of tree fruits here. Plans were made for supplying fillers for part of the apple orchard and for a new strawberry plantation. Good progress has been made in a short time at this Station.

Lennoxville.—I was at the Lennoxville Station on May 11, July 25, and October 19. On the first visit the orchards were being laid out, my assistant, Mr. M. B. Davis being there to help in this. Plans in detail were made at Ottawa showing the positions of the trees and small fruits and the variety and cultural tests, and trees and bushes were ordered for the same. These were planted in good season and the proportion of loss was small. Some 24 acres in all were planted with fruits. Experiments with vegetables and flowers were also planned. Sample ornamental hedges were put out and the horticultural work at this new Station was got well under way this year, and already it has received much attention from people in this district, the vegetables and flowers, especially, looking particularly well.

Fredericton.—July 24 was spent at the Fredericton Station. Absence of snow the previous winter and weather alternating between thawing and freezing had made conditions favourable for root-killing, and there were a considerable number of trees killed making vacancies in the orchard. A small vineyard was planned for the slope above the variety apple orchard. Potatoes are a specialty at this Station and the various experiments were gone over with the Superintendent at this time. The site of the ornamental hedges was decided upon and later in the season these were planted with the aid of my assistant, Mr. F. E. Buck, who went from Ottawa for this purpose and also to plan and plant other parts of the ornamental grounds.

Nappan.—A visit was paid to the Nappan Farm on July 23. It was a very late season in this district and vegetation was not so far advanced as usual. The different plantations were visited and the experiments discussed with the Superintendent. The young orchard planted a few years ago with the varieties of apples which have succeeded best at Nappan looked well. A record is being kept of the cost of developing this orchard.

Kentville.—The Kentville Station was visited on July 18 and 19. There is a large number of experiments being carried on in horticulture at this Station. Some fifty acres are now under fruit and there are many plots of vegetables and flowers. Already this Station has become a bureau of information for the Annapolis Valley on horticultural matters. During my stay here, I drove with the Superintendent to Berwick and went over the spraying experiments being carried on under the direction of the Kentville Station in an orchard there.

Charlottetown.—I was at Charlottetown on July 21, when the lateness of the season as compared with other parts of the Dominion where Farms or Stations are established was very marked. The strawberry season was little more than begun; lilacs were still in bloom. The trees in the apple, plum and cherry orchards here are not making very good growth, as the situation is a very exposed one. The small pear orchard near the Superintendent's house was considered out of place there, and it was decided to move the trees to another situation. The people of Prince Edward Island are making more and more use of this Station to obtain information in regard to fruits, vegetables and ornamental plants. The latter have been very attractive.

Salmon Arm, B.C.—On August 17, I paid a visit to Mr. Thos. A. Sharpe, Salmon Arm, B.C., who reports on the varieties of fruits growing in his orchard and the neighbouring district, and who sends a weekly report to the Horticultural Division on horticulture in the Salmon Arm district.

MEETINGS, ADDRESSES AND PLACES VISITED BY THE STAFF OF THE HORTICULTURAL DIVISION.

A good deal of the time of some members of the staff of the Horticultural Division is taken up each year in attending meetings, in giving addresses, and in becoming better acquainted with horticultural conditions in different parts of Canada, and occasionally, in other countries.

When visiting the Kentville Station in 1915, I visited parts of the Annapolis Valley with the Superintendent, and when West visited the Windermere, Summerland, Vernon, and Salmon Arm districts of British Columbia. From the western Experimental Farms and Stations I went to California to attend the meetings of the American Pomological Society and the Society for Horticultural Science held at Berkeley and to visit, with the members of the former society, the different fruit districts of California and the Panama Pacific and San Diego exhibitions. I joined the party at San Diego and after seeing the exhibition there, the important fruit centres of Los Angeles, Pasadena, San Dimas, Pomona, Whittier, Fresno and other places were visited. While I was impressed with the great resources of California from a horticultural standpoint I feel convinced that, notwithstanding the variety of fruits which can be successfully grown there, Canada offers as good or better prospects of success to a fruit grower than does California. The returns to Californians on some crops in 1915 were very low. The famous plant breeder Mr. Luther Burbank was visited at his home and trial grounds, Santa Rosa, California, and he very courteously showed us over his place and explained the work he was doing.

The Panama Pacific exhibition was visited and the Canadian exhibit found to be one of the most attractive, educational and striking features of it. It received the highest praise from the visiting horticulturists. The exhibit of apples, most of which had been kept in cold storage since the previous year, was particularly fine, and the fruit in preservatives in bottles was in excellent condition, its natural appearance being a tribute to the skill with which the fruit and preservatives are handled.

On September 11, on my return from the United States, I gave an address in Victoria, B.C., on "Vacant Lot Gardens and Vegetable Seed Production." I attended the meeting of the Ontario Horticultural Association on November 10 and 11, and read a paper on "California in Summer from a Horticultural Standpoint" and also presented a descriptive list of "Twenty-five Best Pæonies". I also attended a meeting of the Ontario Vegetable Growers' Association at Toronto the same week. The annual meeting of the Quebec Pomological Society was attended on December 9 and 10, when I read a paper on "Horticultural Work at the Dominion Experimental Stations in the Province of Quebec." At the annual meeting of the Ontario Agricultural and Experimental Union held at the O.A.C., Guelph, Ont., on January 10 to 12, 1916, an address on "Important Factors in Connection with Ontario Fruit Growing" was given, and at the annual meeting of the Ontario Fruit Growers' Association held in Toronto on January 18 to 20, one on "Results of Work in Producing New Fruits at Ottawa". On January 25, I gave an illustrated lecture on the "Use of Ornamental Trees and Shrubs" before the Ottawa Field Naturalists' Club, Ottawa. The meetings of the Niagara Peninsula Fruit Growers' Association were attended at Grimsby and St. Catharines on February 23 to 25, when addresses were given on "Pruning Practices", "Apples, Best Varieties for Profit", "Small Fruits, Varieties and Conditions for Growth." A convention of New Brunswick Potato Growers was held at Woodstock, N.B., on March 22 and 23 during which a New Brunswick Potato Growers' Association was formed. At this meeting I gave an address on "The Potato and its Culture".

Mr. M. B. Davis, Assistant in Pomology, visited a number of places during the year for various purposes. Before installing the irrigation plant for vegetables at Ottawa he went to the Vineland Station, Ont., where a system was installed in 1914, in order to obtain any information that might be useful at Ottawa. On May 2 he went to the Lennoxville Station and assisted in the laying out and planting of the orchards there. On June 7 he visited the cranberry bogs in the Annapolis Valley, N.S., to obtain information in regard to cranberry growing for a bulletin now in press, and from August 28 to September 4 he made a trip to Cape Cod, Mass., for the same purpose. On September 8 and 9 he judged field crops of beans, potatoes, carrots and beets in Wright county, Que. On September 24 he judged the vegetables at the School Fair at Shawville, Que. On January 20, 1916, he addressed the annual meeting of the Nova Scotia Fruit Growers' Association at Wolfville, N.S., on pruning. This address met with such a good reception that his services were asked for to deliver a number of addresses on the same subject at a number of different points. He, therefore, addressed meetings at Kingston, N.S., on February 14; Aylesford, February 15; Canning, February 16; Woodville, February 17, and Berwick, N.S., on February 18.

Mr. F. E. Buck, Assistant in Ornamental Gardening, visited the following places for the purpose mentioned: On April 13 he addressed the Carleton Place Horticultural Society on "Improving the Home Grounds." He visited the Farnham Tobacco Station on April 30 and planted the grounds; the Experimental Farm, Nappan, N.S., on May 12 to 17 to plan and do some planting on the grounds and particularly on a new perennial border. He attended the annual meeting of the Canadian Horticultural Association at London, Ont., on August 2 to 5, and gave a paper on "Works and Aims of Special Committee on Plant Nomenclature," and at a meeting of the Women's Institute, Elgin, Ont., August 12, an address on "Easily Grown Flowers." He judged lawns and gardens at Carleton Place, Ont., on August 21, and at Westboro on August 27. On August 31 he addressed the Ottawa Horticultural Society on "Annuals." Flower shows were judged by him at Carleton Place, Ont., on September 3, and at Smiths Falls, Ont., on September 11. He visited the Fredericton Experimental Station on October 12 to 17 to plant the sample hedges and do other work in connection with the ornamental grounds there. At the Horticultural Society of Winchester, Ont., he gave an address on "Popular Flowers" on November 2. He presented the report of the Names Committee at the Ontario Horticultural Association held in Toronto, November 9 to 11. At the Short Course at Macdonald College, February 10 and 11, 1916, he gave an address on "The Improvement of Home Grounds and Work at the Central Experimental Farm." On March 15 he addressed the Toronto Horticultural Society on "Annuals."

Mr. A. J. Logsdail, Assistant in Plant Breeding, made several journeys to gather material and information for his work. On June 5 he made a trip up the Gatineau Valley for the special purpose of locating plants of the wild blackberry in order later on to cross this with the cultivated varieties to obtain hardier and better sorts. He visited the Experimental Station, Lennoxville, Que., on September 22 to examine material for breeding which was growing there. He attended the meetings of the Ontario Horticultural Association, Toronto, Ont., on November 10, and on the 11th the meeting of the Ontario Vegetable Growers' Association, at which he gave an address on "Seed Production." He attended a meeting of the Ontario Fruit Growers' Association, Toronto, Ont., on January 20, 1916, and on January 22 addressed the London Branch of the Ontario Vegetable Growers' Association on "Seed Production for the Market Gardener."

MATTERS OF SPECIAL INTEREST FOR THE YEAR.

Perhaps the most noteworthy undertaking in the Horticultural Division in 1915 was the installation at the Central Farm of an overhead irrigation system covering seven acres of land devoted to vegetable and strawberry experiments. By special arrangement with the city a certain maximum quantity of water sufficient for the needs of the work was allowed. This water is first pumped into a large tank and then sent by gravity to the pipes in the field. Further details in regard to this installation will be found in another part of the report.

A fine Chrysanthemum show in the new greenhouses in the autumn induced hundreds of people to come from the city to see it and, at the same time, they became acquainted with the other experiments with plants in the greenhouses.

A power mower was obtained for the lawns this year.

A radical change was made in the method of labelling fruit trees in the orchards. By the system of keeping the yields from each individual tree it is necessary to have each tree labelled so that the name and number of the tree does not have to be looked up in the book each time. No kinds of metal labels attached to the trees have proved entirely satisfactory, the name being either hard to read or the labels difficult to find. By the new arrangement each tree is labelled with a small wooden label or stake painted white with black letters and driven into the ground close to the tree on which is written the name of the variety, the date of planting, and the row and tree number. These can be easily read without going close up to them and make the work of recording much easier and quicker, and visitors to the Farm who seldom read the label on the trees can now see at a glance what the tree is. This label may not prove permanently satisfactory, but it is, at least, promising.

PUBLICATIONS.

The following bulletins, pamphlets and articles have been published by the Horticultural Division during the year, besides the Annual Report. In addition to these there are the many papers recorded under the chapter on Meetings and Addresses, and which were published in the annual reports of the various societies before which the papers were given.

Hardy Roses, Their Culture in Canada, Bulletin No. 85, by W. T. Macoun and F. E. Buck, B.S.A.

Planning the Home Lot, Exhibition Circular No. 39, by F. E. Buck, B.S.A.

Beautiful Homes and How the Farmer May Make Them, Exhibition Circular No. 40, by F. E. Buck, B.S.A.

Asparagus, Celery, and Onion Culture, Pamphlet No. 5 Revise, by W. T. Macoun.

Top-grafting, Exhibition Circular No. 15, Revise, by W. T. Macoun.

Factors Influencing the Profitable Production of Potatoes, Exhibition Circular No. 83, by M. B. Davis, B.S.A.

The Cultivation of Small Fruits, Exhibition Circular No. 84, by M. B. Davis, B.S.A.

The following contributions were made to the *Agricultural Gazette of Canada* by the Horticultural Division.

April 1915—Growing Potatoes for Home and Market, by W. T. Macoun.

July 1915—Further Experiments with Fire Pots in Preventing Frost, by M. B. Davis, B.S.A.

August 1915—Vegetable Gardening, by M. B. Davis, B.S.A.
Plant Breeding Work, by A. J. Logsdail, B.S.A.
Ornamental Gardening, by F. E. Buck, B.S.A.

January 1916—Experiments in Growing Vegetable Seeds in 1915, by W. T. Macoun and M. B. Davis, B.S.A.

CORRESPONDENCE.

The correspondence has always been looked upon as one of the most important parts of the work of the Horticultural Division. One may publish the results of experiments in the annual reports and in bulletins, but these publications, valuable as they are, may not contain just the information the individual wants, nor may they reach him at the time when he needs it. When, however, a man or woman writes a letter asking for definite information on some special subject and he or she gets a prompt reply, the information given may be, and has proved to be, worth much to the correspondent. It is a matter of gratification to find that the correspondence of the Horticultural Division is steadily and rapidly growing, notwithstanding the many other means by which Canadians can obtain horticultural information. As stated in the report last year, a much greater interest in horticulture has been noticed since the depression in real estate in Canada and since the outbreak of the war. Canadians seem to be placing a higher value on home life and home surroundings than they ever did before. During the fiscal year, 1915-16 there were 7,249 letters received and 9,007 despatched, the difference between letters received and letters despatched being largely due to the letters received by the Division of Extension and Publicity and transferred to the Horticultural Division. During the past two years there has been an increase each year of more than one thousand letters.

DONATIONS.

As in past years there was a number of donations to the Horticultural Division in 1915. These, are, herewith, gratefully acknowledged.

FRUITS.

Sender.	*Donation.*
Cass, C. A., L'Orignal, Ont.	Apple Scions.
Dunning, E., Ottawa, Ont.	Pits from Seedling of Green Gage.
Fournier, L., Lachute, Que.	Fameuse Apple Scions.
Hansen, N. E., South Dakota Experimental Station.	Scions of Red Wing Apple and Waneta and Kahinta Plums.
Henderson, Mr., Ottawa, Ont.	Scions of Winter Banana Apple
Jones, Harold, Maitland, Ont.	Scions of Unknown Apple.
Mullen, Mr., Cambray, Ont.	Apple Scions.

VEGETABLES.

Fairfield, F. S., Orono, Ont.	Potatoes-Seedling of Aroostook Wonder, Extra Early Surprise, Ontario Wonder. Beans, Extra Early Aroostook Kidney, Yellow Eyed. Turnip Seed-Irish Turnip.
Gordon, F. M., Seal Cove, N.B.	Seedling Potato.

ORNAMENTAL PLANTS.

Barr and Sons, London England.	Flower seeds.
Burpee, Atlee, Co., Philadelphia.	Flower seeds.
City Greenhouses, Toronto, Ont.	Cuttings of Double White Petunia.
Skinner, F. L., Dropmore, Man.	Bulb of *Lilium regale.*
Sutton and Sons, Reading, England.	Flower seeds.
Sydenham and Co., Birmingham, England.	Flower seeds.
Temple, Mrs., Salmon Arm, B.C.	Geraniums.

PLANT BREEDING.

Butler, N. E., Weymouth, N.S.	Two samples of bean seed of Apparent Hybrid origin.
Horticultural Experimental Station, Vineland, Ont.	Seeds and plants of Native species of Aquilegia.
Howitt, H. M., Dept. of Agriculture, Prince Rupert, B.C.	Seed of Native Strawberries, Atlin, District, B.C.
McLeod, D. P., Gould Station, Que.	Seed of garden pea, Hybrid origin.
Payment, Mrs. John, Bangscote, Bangs Falls, N.S.	Seed of Lupine.

OTTAWA.

ACKNOWLEDGMENTS.

Acknowledgments are again due and are gratefully rendered to the following members of the staff of the Horticultural Division who, in one responsible position or another, have made it possible to accomplish what has been done during the past year. Mr. M. B. Davis, B.S.A., Assistant in Pomology; Mr. F. E. Buck, B.S.A., Assistant in Ornamental Gardening; Mr. A. J. Logsdail, B.S.A., Assistant in Plant Breeding; Mr. M. D. McCallum, Secretary; Mr. H. Holz, Foreman; Mr. J. McKee, Foreman in Charge of Greenhouses; Mr. H. J. Read, in Charge of Records; Mr. W. T. Ellis, Assisting with Records; Mr. John Melvin and Mr. Howard Russell, Assisting at special work among the fruits and vegetables; Mr. J. Taggart and Mr. F. Taggart, Foremen on Ornamental Grounds; Mr. Geo. Perrin, Assistant Foreman in the Greenhouses; Mr. G. E. Bass and Miss Muriel Hervey, Stenographers. It is desired to make especial mention of the services of Mr. M. B. Davis, B.S.A., who in addition to his work with fruit, in the absence of Mr. C. F. W. Dreher at the front took personal supervision of the vegetable experiments and prepared the report on the results of the experiments for the year, so relieving me of the details of this work. I have much pleasure, also, in acknowledging the services of those other men in the Horticultural Division who, though they may not be given any responsibility, yet contribute their share to the success of the work.

I also desire to express my appreciation of the co-operation which the Superintendents of the Branch Farms and Stations give in the Horticultural work and of their kind hospitality shown to me when making my visits to the farms of which they have charge. To many other men in Canada and the United States who have been good enough to assist me in giving information desired my thanks are also due.

I have the honour to be, sir,

Your obedient servant,

W. T. MACOUN,

Dominion Horticulturist.

OTTAWA.

CENTRAL EXPERIMENTAL FARM, OTTAWA, ONT.

CHARACTER OF SEASON.

Every year, since 1898, there has been published in the Annual Report of the Horticultural Division a chapter on the character of the season, especially in its relation to horticultural crops. This is very useful for reference for prospective fruit and vegetable growers and for those already growing these crops. Those growing ornamental plants are also interested in these records.

There was an early spring in 1915, the ground being free enough of frost to permit digging on April 5, the average for eighteen years being April 11.

Owing to the light snowfall the strawberries were more exposed to the changes of temperature than usual and the plantation suffered considerably.

The tenderer roses were badly injured by winter for the same reason. Evergreens suffered considerably, several trees of the balsam fir, both on the Experimental Farm and the driveway, dying or being killed to near the ground. Hovey's arbor-vitæ has suffered more than other varieties, though the pyramidal arbor-vitæ had branches killed on the south side of some specimens. Except for the first week, April was a moderately warm month. The temperature rose to 87·3° Fahr. on the 25th. The lowest temperature was 25° Fahr. on the 4th. It was a relatively dry month, there being only 0·99 inch of precipitation.

May was a moderately warm to rather cool month. The highest temperature was 78·6° Fahr. on the 31st. It was below freezing twice during the month: on the 16th, when it was 31·8°, and on the 27th, when it was 31·9°, the last spring frost. This latter frost injured plum and cherry blossoms, the fruit being just setting, and also the flowers of strawberries. This frost was much more severe in parts of Ontario farther south and west than it was at Ottawa. May was a very dry month, there being 1·86 inches of rain, which fell mainly as light showers.

By June 8 the grass of the lawns was showing the effects of the drought, but on the 14th and the 15th there were good rains, nearly half the total precipitation of 2·94 inches being on these dates. Cut-worms were particularly troublesome during the latter part of May and early half of June. The highest temperature was 90·1° on the 5th, but there was little hot weather during the month.

The highest temperature of the summer occurred on July 31, when it was 92°, and while the hottest spell of the month was from the 9th to the 16th, July was not a hot month on the whole, and the nights were cool. The rainfall was light, there being only 2·12 inches.

August was only a moderately warm month and the nights were cool. The highest temperature was 86° on the 11th. This was the wettest month of the growing season, there being 7·09 inches of rain, which fell on seventeen days.

September was moderately warm also. The highest temperature was 88·7° on th 15th, and the lowest 35° on the 28th and 30th. There were frequent showers during the month, but no very heavy rain at one time. The total precipitation was 2·87 inches.

October was moderately warm to cool, the highest temperature being 72·4° on the 13th. The first recorded frost was on the 11th, when the temperature fell to 27·8°. Up to that time such tender things as squash and tomatoes on high ground had not been killed, though light frost not recorded by the official thermometer had injured these to some extent previously on the lower ground. Practically all annual flowers had been uninjured up to this date and there was still considerable bloom on October

25, when a temperature of 26·6° killed most of the remaining flowers. The weather was fine most of the time in October, there being only 1·30 inches of rain, making conditions favourable for a ripening up of the fruit trees. The autumn was rather cool, however, for the ripening of the grape crop, few varieties being thoroughly matured.

The highest temperature in November was 60·8° on the 1st, and the lowest 14° on the 18th. It became mild during the latter part of the month and winter did not really set in until December 2, when snow began to fall on the unfrozen ground and the temperature becoming lower, this remained. The average date for eighteen years when winter has set in, or when frost or snow stopped ploughing, is November 25.

December was comparatively mild for the season of the year. The lowest temperature was 8·2° below zero on the 31st, and it was only twice below zero during the month and above freezing on seven days, the weather being very changeable. There was a heavy snowfall in December.

January was a moderately cold month with very changeable weather. Although the temperature was below zero on nine days, the lowest was only 16° below. The temperature was above freezing on 12 days, the highest temperature being 42° on the 22nd. There was a thick coat of ice over the snow during the latter part of January.

February was only moderately cold and the weather not so changeable as in January, the lowest temperature being 19·4° below zero on the 21st, which was the lowest temperature of the winter. It was below zero on thirteen days during the month. The temperature rose above freezing on four days. There were frequent snowfalls in February.

March was a rather cold month for the time of the year. The temperature was 17·2° below zero on the 18th, and fourteen times below during the month. It began to thaw on the 24th, at which time there was a great depth of snow. The precipitation of snow was 130 inches during the winter, one of the heaviest on record. Owing to this great covering there was little frost in the ground.

FRUIT AND VEGETABLE CROPS.

The fruit crop on the whole was a disappointing one to Canadian growers in 1915. Spring frosts in some parts of Canada and Apple Scab in others caused a marked reduction in the amount of good apples promised by the abundant bloom when the flowers opened. In Ontario the apple crop was light to medium and the fruit much scabbed in some sections. In Quebec and New Brunswick the crop was light, and on Prince Edward Island, medium. In the Annapolis Valley of Nova Scotia there was a medium crop of fruit of which the proportion of No. 1 fruit was relatively small because of the scab. In British Columbia the crop was a medium one, but a late development of scab in some districts lowered the quality very much. There was a fair crop of apples in Southern Manitoba and Southern Alberta on the trees which are being grown there. The crop of pears was light to medium in those parts of Canada where pears are grown. The plum crop was a good one on the whole. Cherries were a medium to good crop. In some parts of Ontario the yield was reduced by spring frosts. There was a good crop of peaches both in Ontario and British Columbia. The crop of grapes in Ontario was only a medium one, and the fruit did not ripen as well as usual owing to the cool autumn.

The strawberry crop was reduced by spring frosts in Ontario and Quebec, and it was only a light to medium crop, except in a few favoured sections. In the Maritime Provinces the crop was good, and in British Columbia it was medium to good. The crop of currants was lessened considerably in Ontario by spring frosts, but taking the whole of Canada the crop of these, and raspberries and gooseberries, was good. Small fruits are being much more grown in the prairie provinces than formerly, and there was a good crop this year.

Ottawa.

The conditions for vegetables in general were not very favourable, as droughts at one season and excessive moisture at another were hard on some crops. In Eastern Canada the summer was cool and wet, and the potato crop suffered from late blight, while the tomato crop was below medium as the conditions were unfavourable for ripening. In the Prairie Provinces and in British Columbia the potato crop was much better than in most places in Eastern Canada.

At the Central Farm the crop of apples was a medium one and the fruit very free of scab and codling moth. Thorough spraying for nearly twenty-five years has made it much easier to control certain insects and diseases than where spraying is not done regularly. Owing to spring frosts the plum crop was a medium to light one, and the crop of cherries was light as usual. Bush fruits and strawberries were medium. Grapes did not ripen well owing to the cool autumn. The spring being very dry, the season opened unfavourably for vegetables, but as there was sufficient rain after the middle of June for the hardier vegetables, these did very well. The vegetables such as tomatoes, cucumbers, melons, peppers and other crops needing warmer weather than was experienced in the latter part of summer did not ripen as large a crop as usual. The potatoes in the experimental plots gave a fair yield and, owing to thorough spraying, there was little late blight.

SEEDLING FRUITS SENT FOR EXAMINATION, 1915-16.

As in other years a number of seedling fruits from different parts of Canada were sent to the Horticultural Division for examination. It is customary to make a full description of the most promising or interesting of these, and a record and partial description of the others. Following is a list of those received during 1915-16:—

Record Number—		
636	seedling apple	from Percy Robertson, Montague, P.E.I.
637-638	"	Earnest Eaton, Upper Canard, N.S.
639	"	No. 1 "Roberts Beauty" from H. W. Roberts, Clarendon Station, N.B.
640	"	from Jack & Sons, Chateauguay Basin, Que. (See full description.)
641	"	Alfred Picard, Village des Aulnaies, Que. (See full description.)
642	"	W. E. Jones, West Shefford, Que.
643	"	John Butcher, Peterboro, Ont. (See full description.)
644	"	W. Roger, Aylmer, Que. (See full description.)
645	"	J. Antin, Brockville, Ont.
646	"	Jas. Crawford, Williamstown, Ont.
647-649	"	Mrs. F. H. McRae, Beaverton, Ont.
650	"	A. Munn & Sons, Ripley, Ont. (Seedless Apple.) (See full description.)
651-653	"	C. L. Stephens, Orillia, Ont.
654-655	"	Valley River Nursery, Valley River, Man.
656	"	Goodacre & Browse, Wilson Landing, B.C. (See full description.)

640. *Seedling apple from R. Jack & Sons, Chateauguay Basin, Que.*—Medium size; roundish, slightly ribbed; cavity open, medium depth; stem medium length, moderately stout; basin open, medium depth, slightly wrinkled; calyx partly open or closed; pale yellowish green almost covered with deep crimson; seeds medium size, broad, acute; dots moderately numerous, white, distinct; bloom bluish; skin moderately thick, moderately tender; flesh white with traces of red, has a slight Fameuse-like aroma, crisp, juicy; core medium; flavour mildly subacid, pleasant, suggesting Fameuse; quality good; season evidently October to December or January.

"Fruited for first time this year. Think it is a seedling of McIntosh crossed with Fameuse which is very near, or else it is a seedling of Fameuse. No special care. Grew up along a fence line. Tree is of upright growth and seems to be quite hardy. It bore about half a bushel this year." Resembles Fameuse considerably in colour and general outward appearance and slightly like Fameuse in flavour. It is not quite decided enough in flavour to be very promising, but is worth looking after.

641. *Seedling from Alfred Picard, Village des Aulnaies, Que.*—Medium size; roundish, regular; cavity narrow, medium depth; stem short, moderately stout; basin

open, medium depth, wrinkled; calyx partly open; pale yellow, thinly washed with carmine on sunny side; seeds large, acuminate; dots obscure; skin moderately thick, tender; flesh white, tender, juicy; core medium; flavour subacid, pleasant; quality evidently good though past condition; season evidently early to mid winter.

Has a perfume. Probably a seedling grown in uncultivated ground.

643. *Seedling apple from John Butcher, 301 Burnham street, Peterboro, Ont.*—Large size; oblate conic; cavity deep, open; stem short, moderately stout; basin deep, medium width; calyx closed; pale greenish yellow thinly washed with pinkish red on sunny side; seeds large, acute; dots few, indistinct; skin moderately thick, tender; flesh dull white or yellowish; crisp, juicy; core medium; flavour subacid, pleasant; quality good; season evidently October and November.

Flesh is too coarse for a good dessert apple and not sufficiently attractive in appearance. Should make a good cooker.

644. *Seedling apple from W. Roger, Registration Branch, Department of Interior, Ottawa, Ont. (grown at Aylmer, Que.).*—Large size; oblate to roundish; cavity deep, open; stem medium length, moderately stout; basin deep, open, slightly wrinkled; calyx open; yellow, washed, splashed and striped with carmine; seeds medium size, acute; dots few, white, distinct; skin moderately thick, tender; flesh white with traces of red; core medium; flavour subacid, pleasant; quality good; season evidently November to January.

Probably a seedling of St. Lawrence. Second crop. Probably seven years old. May prove a useful apple.

650. *Seedling apple from A. Munn & Sons, Ripley, Ont.*—Medium size; roundish, ribbed; cavity shallow, medium width; stem short, moderately stout; basin medium depth and width, wrinkled; calyx open or partly open; pale yellowish green washed with pinkish red on sunny side; seedless; dots few, indistinct; skin moderately thick, moderately tough; flesh white, tender, juicy; core large, open; acid, little flavour; quality medium; season October.

A seedless apple but not promising.

656. *Seedling apple from Goodacre & Browse, Wilson Landing, Okanagan Landing, B.C.*—Above medium in size; roundish, obtusely conical; cavity medium depth and width; stem short, stout; basin deep, open, nearly smooth; calyx partly open; yellow, washed and splashed with crimson or orange red; seeds medium size, acute; dots moderately numerous, yellow, distinct; skin moderately thick, tender; flesh yellowish, firm, moderately juicy, rather coarse; core small; flavour subacid, to mildly subacid, pleasant; quality good; season evidently late November, probably to January or February.

Said to be a seedling of Wealthy. An attractive looking apple resembling Sutton Beauty considerably. Promising. Should ship well.

APPLES ORIGINATED IN THE HORTICULTURAL DIVISION.

There is an increasing number of apple trees beginning to fruit each year of which both parents are known or, in other words, which were originated by hand pollination, but there are no new ones which have been thought worthy of a name this year. On the other hand there are three seedlings of which only one parent is known which have been named and descriptions of these follow. One cross-bred apple originated by the late Dr. Wm. Saunders has been named during the past year and a description of it will be found after the other three. Following these descriptions is a list of names of varieties of apples originated in the Horticultural Division, 118 in all, with references as to the time of sowing the seed, planting in the orchard, first fruiting and time and place where the descriptions occur in the annual report. There are not included, in this, the names of apples originated by the late Dr. Wm. Saunders, as they were originated outside the Horticultural Division, but a full list of such names will be published in a subsequent report.

Beda (*Langford Beauty Seedling*).—Size medium, oblate to roundish; cavity medium depth and width; stem medium length, stout; basin deep, open, wrinkled; calyx open; pale yellow thinly splashed and washed with bright carmine; seeds obtuse or acute; dots obscure; skin moderately thick, moderately tough; flesh yellowish, crisp, tender, juicy; core medium size, open; flavour subacid, pleasant; quality good; season late September and October.

Does not resemble Langford Beauty except in having tender, fine grained flesh.

Girton (*Wealthy Seedling*).—Size above medium to medium; roundish conical, slightly ribbed; cavity narrow, deep, russeted; stem short, slender to moderately stout; basin deep, medium width; calyx open; greenish yellow to yellow, thinly washed with crimson; dots white, indistinct; skin moderately thick, tough; flesh dull white or yellowish, crisp, tender; core small, open; flavour subacid, pleasant, spicy; quality good; season November to late February or March.

Resembles Wealthy somewhat in outward appearance and in character of flesh.

Honora (*McIntosh Seedling*).—Size medium; roundish to oblate conic; cavity open, medium depth, russeted; stem short, stout, sometimes clubbed; basin medium depth and width, wrinkled; calyx closed: yellow well washed with crimson; seeds medium size, acuminate; dots obscure; skin moderately thick, tough; flesh white tinged with red, tender, melting, moderately juicy: core medium size, open; flavour mildly subacid, pleasant; quality good; season late September, probably through October.

Resembles McIntosh very much in colour and somewhat in shape, also in character of flesh and in being highly perfumed like McIntosh. Attractive in appearance.

Piotosh (*Pioneer X McIntosh*).—Size above medium for a crab; roundish; cavity medium depth and width; stem long, moderately stout; basin open, medium depth, wrinkled; calyx closed; yellow well washed with bright crimson; seeds below medium for apple, large for a crab, acute; dots obscure; bloom pinkish; skin thin, tender; flesh yellow tinged with red near skin; core medium; flavour subacid, pleasant, no astringency; quality good for a crab; season late September.

A handsome crab apple somewhat resembling Transcendent. No marked resemblance to McIntosh.

NAMES GIVEN TO APPLES ORIGINATED IN THE HORTICULTURAL DIVISION, CENTRAL EXPERIMENTAL FARM, OTTAWA, UP TO MARCH 31, 1916.

Seedling Varieties.	Female Parent	Date of Sowing seed.	Date of Planting tree.	Date of first fruiting.	Fruit described.
Ascot	Northern Spy	Autumn, 1898	Spring, 1903	1912 R.	1913, P. 292.
Bingo	“	“	“ 1902	1910 R.	1911, P. 110.
Donald	“	“	“ 1902	1909 R.	1912, P. 92.
Elmer	“	“	“ 1902	1911 R.	1912, P. 92.
Emilia	“	“	“ 1902	1914 R.	1915, P. 595.
Epsom	“	“	“ 1902	1912 R.	1913, P. 293.
Galton	“	“	“ 1906	1912 R.	1915, P. 595.
Glenton	“	“	“ 1902	1909 R.	1911, P. 111.
Homer	“	“	“ 1902	1908 R.	1910, P. 135.
Lipton	“	“	“ 1904	1914 R.	1915, P. 595.
Marcus	“	“	“ 1902	1911 R.	1912, P. 93.
Nestor	“	“	“ 1902	1912 R.	1912, P. 93.
Niobe	“	“	“ 1902	1909 R.	1911, P. 111.
Rocket	“	“	“ 1902	1910 R.	1911, P. 112.
Rosalie	“	“	“ 1901	1908 R.	1911, P. 112.
Sandow	“	“	“ 1902	1911 R.	1912, P. 94.
Sparta	“	“	“ 1901	1912 R.	1914, P. 495.
Marne	“	“	“ 1903	1913 R.	1915, P. 595.
Orlando	“	“	“ 1902	1911 R.	1913, P. 294.
Pandora	“	“	“ 1902	1908 R.	1913, P. 294.
Tasty	“	“	“ 1902	1911 R.	1912, P. 94.
Thurso	“	“	“ 1901	1907 R.	1908, P. 103.
22 varieties.					
Beda	Langford Beauty	“	“ 1902	1910 R.	1916, P. 617.
Brisco	“	“	“ 1903	1910 R.	1913, P. 292.
Cora	“	“	“ 1902	1907 R.	1911, P. 110.
Diana	“	“	“ 1903	1912 R.	1913, P. 292.
Diacet	“	“	“ 1903	1911 R.	1914, P. 494.
Gulena	“	“	“ 1903	1911 R.	1913, P. 293.
Galner	“	“	“ 1902	1907 R.	1908, P. 101.
Garald	“	“	“ 1903	1911 R.	1912, P. 92.
Herace	“	“	“ 1902	1908 R.	1912, P. 93.
Kordare	“	“	“ 1902	1908 R.	1911, P. 111.
Kilm	“	“	“ 1902	1908 R.	1911, P. 111.
Liinda	“	“	“ 1902	1908 R.	1915, P. 595.
Moreno	“	“	“ 1902	1908 R.	1913, P. 293.
Monitor	“	“	“ 1903	1909 R.	1912, P. 93.
Ripon	“	“	“ 1902	1908 R.	1911, P. 111.
Sonora	“	“	“ 1902	1907 R.	1908, P. 102.
16 varieties					
Brock	McIntosh	“	“ 1901	1908 R.	1910, P. 134.
Carno	“	“	“ 1901	1907 R.	1911, P. 110.
Caruso	“	“	“ 1903	1909 R.	1912, P. 91.
Casco	“	“	“ 1903	1913 R.	1914, P. 494.
Garnet	“	“	“ 1901	1908 R.	1912, P. 92.
Gilda	“	“	“ 1904	1909 R.	1914, P. 494.
Grover	“	“	“ 1901	1908 R.	1913, P. 293.
Honora	“	“	“ 1901	1908 R.	1916, P. 617.
Lobo	“	“	“ 1901	1906 R.	1910, P. 135.
Forerunner	“	“	“ 1904	1910 R.	1915, P. 595.
Melba	“	“	“ 1901	1908 R.	1909, P. 111.
Nemo	“	“	“ 1901	1908 R.	1912, P. 93.
Joyce	“	“	“ 1901	1911 R.	1912, P. 93.
Pedro	“	“	“ 1903	1911 R.	1913, P. 294.
Service	“	“	“ 1901	1908 R.	1912, P. 94.
Seton	“	“	“ 1901	1908 R.	1911, P. 112.
Toshlet	“	“	“ 1901	1912 R.	1914, P. 495.
Valerie	“	“	“ 1903	1908 R.	1914, P. 495.
Winton	“	“	“ 1901	1908 R.	1915, P. 596.
19 varieties.					
Humber	American Golden Russet	“	“ 1902	1911 R.	1913, P. 293.
1 variety.					

OTTAWA.

NAMES GIVEN TO APPLES ORIGINATED IN THE HORTICULTURAL DIVISION, CENTRAL EXPERIMENTAL FARM, OTTAWA, UP TO MARCH 31, 1916.—*Continued.*

Seedling Varieties.	Female Parent.	Date of Sowing seed.	Date of Planting tree.	Date of first fruiting.	Fruit described.
Lucia	Salome	Autumn, 1898.	Spring, 1902	1912 R.	1914, P. 494.
Cleaver	“	“	“ 1902	1910 R.	1912, P. 92.
Manda	“	“	“ 1902	1910 R.	1913, P. 293.
Nepean	“	“	“ 1902	1908 R.	1910, P. 135.
Oswald	“	“	“ 1902	1908 R.	1910, P. 136.
Rondo	“	“	“ 1902	1911 R.	1912, P. 94.
Rouleau	“	“	“ 1902	1907 R.	1910, P. 136.
Stella	“	“	“ 1902	1908 R.	1910, P. 136.
8 varieties.					
Petrel	Shiawassee	“	“ 1901	1907 R.	1910, P. 136.
Ramona	“	“	“ 1902	1908 R.	1913, P. 294.
2 varieties.					
Albert	Winter St. Lawrence	“	“ 1901	1909 R.	1912, P. 91.
Anson	“	“	“ 1901	1909 R.	1910, P. 134.
Atlas	“	“	“ 1902	1910 R.	1912, P. 91.
Drumbo	“	“	“ 1902	1910 R.	1915, P. 594.
Linton	“	“	“ 1901	1907 R.	1908, P. 102.
Nile	“	“	“ 1902	1908 R.	1912, P. 94.
6 varieties.					
Adonis	Wealthy	“	“ 1901	1905 R.	1905, P. 107.
Battle	“	“	“ 1901	1906 R.	1910, P. 134.
Clive	“	“	“ 1902	1907 R.	1908, P. 101.
Consort	“	“	“ 1901	1908 R.	1914, P. 494.
Crusoe	“	“	“ 1901	1903 R.	1906, P. 107.
Galetta	“	“	“ 1902	1906 R.	1906, P. 108.
Girton	“	“	1901	1908 R.	1916, P. 617.
Jethro	“	“	“ 1902	1911 R.	1914, P. 494.
Luke	“	“	“ 1902	1906 R.	1911, P. 111.
Medford	“	“	“ 1901	1906 R.	1908, P. 102.
Melvin	“	“	“ 1901	1905 R.	1910, P. 135.
Mendel	“	“	“ 1902	1906 R.	1906, P. 108.
Pinto	“	“	“ 1902	1906 R.	1909, P. 111.
Prosper	“	“	“ 1902	1908 R.	1910, P. 136.
Noel	“	“	“ 1901	1905 R.	1906, P. 108.
15 varieties.					
Roger	Gano	“	“ 1902	1908 R.	1911, P. 112.
1 variety.					
Cobalt	Lawver	“	“ 1902	1908 R.	1910, P. 134.
Congo	“	“	“ 1901	1906 R.	1906, P. 107.
Danville	“	“	“ 1902	1908 R.	1909, P. 111.
3 varieties.					
Herald	Fameuse	“	“ 1902	1902 R.	1910, P. 135.
1 variety.					
Ambo	Swayzie	“	“ 1904	1912 R.	1914, P. 493.
Cromer	“	“	“ 1902	1905 R.	1909, P. 111.
Navan	“	“	“ 1902	1906 R.	1906, P. 108.
Nome	“	“	“ 1904	1909 R.	1915, P. 596.
Ottawa	“	“	“ 1902	1906 R.	1906, P. 108.
Radnor	“	“	“ 1902	1907 R.	1909, P. 111.
Severn	“	“	“ 1901	1906 R.	1908, P. 102.
— 7 varieties.					
Bruno	Scott Winter	“	“ 1901	1907 R.	1908, P. 101.
1 variety.					
Claire	Russian	Autumn, 1889.	“ 1890	1906 R.	1906, P. 107.
Neville	“	“ 1889.	“ 1890	1904 R.	1906, P. 108.
Oscar	“	“ 1889.	“ 1890	1897 R.	1908, P. 102.
Rupert	“	“ 1889.	“ 1890	1897 R.	1906, P. 109.
Percival	“	“ 1889.	“ 1890	1906 R.	1906, P. 108.
5 varieties.					

NAMES GIVEN TO APPLES ORIGINATED IN THE HORTICULTURAL DIVISION, CENTRAL EXPERIMENTAL FARM, OTTAWA, UP TO MARCH 31, 1916.—*Concluded.*

Seedling Varieties.	Female Parent.	Date of Sowing seed.	Date of Planting tree.	Date of first fruiting.	Fruit described.
Cross-bred Varieties.					
Rustler	McIntosh X Lawver	Autumn, 1899.	Spring, 1903.	1912 R.	1913, P. 294.
Mavis	"	" 1899.	" 1903.	1909 R.	1915, P. 599.
Vermac	Lawver X McIntosh	" 1899.	" 1902.	1908 R.	1913, P. 295.
Holz	"	" 1899.	" 1903.	1911 R.	1912, P. 92.
Granby	McMahan X Scott Winter	" 1895.	" 1896.	1907 R.	1908, P. 101.
Kelso	"	" 1895.	" 1896.	1907 R.	1908, P. 102.
Sorel	"	" 1895.	" 1896.	1907 R.	1908, P. 102.
Dorval	"	" 1895.	" 1896.	1905 R.	1906, P. 107.
Roberval	"	" 1895.	" 1896.	1905 R.	1906, P. 108.
Valois	"	" 1895.	" 1896.	1905 R.	1906, P. 109.
Walton	"	" 1895.	" 1896.	1903 R.	1906, P. 109.
11 varieties.					
Total, 118 varieties.					

The following names recorded first in the Annual Report of the Experimental Farms for 1906 were given to seedling varieties of Russian origin, descriptions of which have not yet been published. These were among the best and apparently the hardiest of 3,000 trees. They have been sent to the prairie provinces for trial and should any of them prove promising descriptions will appear in the annual reports. Arcola, Birtle, Bowie, Bolton, Beaver, Bomba, Bison, Carlyle, Carman, Cicero, Cecil, Carrie, Crescent, Cottage, Dauphin, Dewar, Earliana, Grenfell, Hanley, Hamlet, Harbinger, Jarvis, Jasper, Jacko, Lang, Leroy, Mentor, Melfort, Morden, Murillo, Morley, Nipigon, Osler, Otter, Pingree, Ponoka, Parma, Polaris, Roslin, Rawdon, Selkirk, Snelling, Solina, Sorley, Sanford, Souris, Selwyn, Vesta, Virgil, Varna, Virden, Woburn and Wesley—53 varieties.

CHARACTERS OF SEEDLING APPLES ORIGINATED IN THE HORTICULTURAL DIVISION.

As descriptions are taken of the seedling apples which are originated in the Horticultural Division whether they are large or small or good, medium, or poor in quality, it is possible to tell after a time what parents are giving the largest proportion of good seedlings and which the smallest. In the following table certain characters of 1211 seedlings from twelve varieties are given in such a form that they can be easily compared. These seedlings were raised from seed saved from apples which fruited at Ottawa in 1898. The flowers were not hand-pollinated and the male parents can only be suggested by the characters of the seedlings and the varieties which grew nearest to the tree from which the seed was taken, and of which there is a record. While the male parent is thus not known with certainty, a study of the following table will be found very interesting. The characters of the seedlings of a few of these varieties have been published in previous annual reports, but more trees of these have fruited since. The descriptions were all made by the writer, hence the same relative values are more likely to be given to the characters of the different seedlings than if several persons, having different standards, had described them. The notes and figures under *Resemblance* do not apply to all the seedlings described. If a character of a female parent was conspicuous in the seedling it was noted but, no doubt, there were many slight resemblances which were not noted, hence the percentages after the various headings under *Resemblance* are merely suggestive; but all the other characters were recorded for all the seedlings.

The following characters of the seedlings of the varieties are quite marked.

Fameuse Seedlings.—It is generally supposed that seedlings of Fameuse resemble the female parent in a marked degree. In this case the number of good Fameuse seedlings has been small, while a large proportion of the seedlings of McIntosh, which is supposed to be a seedling of Fameuse, have been good.

Gano Seedlings.—A large proportion of the seedlings resemble the female parent in regularity of form, in colour, in absence of flavour, and in having large seeds. A large proportion of the seedlings are winter apples like the female parent.

American Golden Russet Seedlings.—It is interesting to note that of 28 seedlings which have fruited none has a russet skin. In 78·58 per cent green or yellow predominates. A comparatively small proportion have been propagated and only one has been thought good enough to name.

Langford Beauty Seedlings.—A large proportion are handsome, fine-grained apples of the Fameuse type with a marked resemblance to the female parent or to Louise, a seedling of Fameuse.

Lawver Seedlings.—While twenty-nine per cent of the seedlings are late-keeping apples like the female parent, it is interesting to note that a large proportion have a season before December. Some of the Lawver seedlings show marked signs of Northern Spy blood, particularly in character of flesh and flavour. Both Lawver and Northern Spy are late-blooming sorts and were not very far apart in the orchard in 1898.

McIntosh Seedlings.—The McIntosh is supposed to be a seedling of Fameuse and has many Fameuse characteristics. Its seedlings have been much better than the Fameuse seedlings, nearly one-half the McIntosh seedlings being thought worthy of propagation, while less than a fourth of the Fameuse seedlings were propagated.

Northern Spy Seedlings.—Though, at least, partially self-sterile, and thus doubtless pollenized by some other variety or varieties, there has been a marked resemblance to the Northern Spy in a large proportion of the seedlings in outward appearance, flesh, and flavour, and in being late-keeping apples.

Salome Seedling.—The Salome has given some good seedlings, though the best are not from this variety. A large proportion of the seedlings bore a marked resemblance to Salome in outward appearance, flesh and flavour.

Shiawassee Seedlings.—The Shiawassee is a seedling of Fameuse. A large proportion of its seedlings had fine grained, tender flesh and were above medium to good in quality, but the percentage thought worth propagating was only a little larger than the Fameuse seedlings.

Swayzie Seedlings.—Only a small proportion of the seedlings resemble the parent in outward appearance, though a large percentage bear a marked resemblance to Swayzie in flavour. The Swayzie is a small apple, but of the seedlings, over 78 per cent were medium to large.

Wealthy Seedlings.—There is a general resemblance to Wealthy in a large proportion of the seedlings, particularly in colour and the regular outline of the fruit and character of flesh and flavour.

Winter St. Lawrence Seedlings.—The Winter St. Lawrence has given a large proportion of seedlings above medium to good in quality, but the proportion thought worthy of propagation is about the same as for Fameuse. There are few late keeping apples among them.

In describing the apples of which the characteristics are given in the following table, the standards adopted for size were as follows:—

Small—2¼ inches in diameter, and below.
Below medium—2¼ to 2½ inches in diameter.
Medium—2½ to 2¾ inches in diameter.
Above medium—2¾ to 3 inches in diameter.
Large—3 to 3½ inches in diameter.
Very large—Above 3½ inches in diameter.

	Character of female Parent.	Fameuse Seedlings.	Character of female Parent.	Gano Seedlings.	Character of female Parent.	American Golden Russet Seedlings.	Character of female Parent.	Langford Beauty Seedlings.	Character of female Parent.	Lawver Seedlings.	Character of female Parent	McIntosh Seedlings.	Character of female Parent	Northern Spy Seedlings.	Character of female Parent.	Salome Seedlings.	Character of female Parent	Shiawassee Seedlings.	Character of female Parent.	Swayzie Seedlings.	Character of female Parent.	Wealthy Seedlings.	Character of female Parent.	Winter St. Lawrence Seedlings.
No. Seedlings Fruited		91		83		28		140		62		120		136		108		99		130		136		78
No. Seedlings Propagated		21		10		4		61		15		56		63		23		26		36		44		19
No. Seedlings Named		1		1		1		16		3		19		22		9		2		7		15		6
Size—		%		%		%		%		%		%		%		%		%		%		%		%
Small		6·59		6·02		0·00		0·00		6·45		5·00		2·21		2·78		3·08	x	5·39		7·35		2·57
Below medium		15·39		12·05		10·71		5·00		11·29		18·33		10·29		16·67		11·11		16·15		13·24		12·82
Medium	x	58·24		40·96	x	42·86		54·29	x	62·90		50·84		47·06	x	50·00	x	58·59		43·85		43·39		57·69
Above medium		17·59	x	38·56		35·72	x	35·00		19·36	x	23·33		30·15		22·22		22·22		26·15	x	29·41	x	19·23
Large		2·19		2·41		10·71		5·71		0·00		2·50	x	10·29		8·33		5·05		8·46		6·61		7·69
Total		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00
Form—																								
Oblate		30·77		13·25		32·14		35·00		35·48		46·67		37·50		18·52	x	66·67	x	40·00		33·09		14·10
Roundish	x	53·85	x	38·56	x	57·15	x	53·57	x	38·71	x	48·33	x	36·03	x	67·59		31·31		53·08	x	61·03	x	79·48
Conical		13·19		43·37		0·00		11·43		16·13		3·33		26·47		3·70		2·02		3·84		2·94		6·42
Oblong		2·19		4·82		10·71		0·00		9·68		1·67		0·00		10·19		0·00		3·08		2·94		0·00
Total		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00
Colour—																								
Entirely Green or Yellow		2·19		0·00		3·57		2·14		0·00		0·83		1·47		0·00		5·05		4·61		0·00		0·00
Green or Yellow Predominating		16·49		25·30		78·58		17·14		12·90		24·16		8·09		5·56		29·29		40·77		5·15		15·38
Crimson or Red	x	60·44	x	67·47		3·57	x	76·43	x	58·06	x	65·83	x	72·79		44·44	x	59·60		23·85	x	73·53	x	66·67
Pink or pinkish red		14·29		0·00		3·57		0·72		8·07		5·00		2·21		7·41		1·01		0·77		0·73		1·28
Orange or orange red		6·59		7·23		10·71		3·57		20·97		4·18		15·44	x	42·59		5·05		23·08		20·59		16·67
Russet		0·00		0·00		0·00		0·00		0·00		0·00		0·00		0·00		0·00	x	6·92		0·00		0·00
Total		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00		100·00

Flavour—												
Sweet	16·49	9·64	0·00	3·57	16·13	19·16	6·62	17·59	2·02	10·77	13·97	16·67
Mildly subacid	6·59	x 16·87	3·57	5·00	11·29	4·18	5·15	11·11	2·02	7·69	0·73	5·12
Subacid	x 56·04	56·62	x 75·00	x 60·71	59·68	x 60·00	x 60·29	x 46·30	x 65·66	x 53·08	38·97	x 56·41
Briskly subacid	18·69	16·87	21·43	29·29	x 11·29	15·83	25·00	22·22	26·26	24·62	x 36·77	19·23
Acid	2·19	0·00	0·00	1·43	1·61	0·83	2·94	2·78	4·04	3·84	9·56	2·57
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00
Quality—												
Poor	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·73	0·00
Below medium	1·10	1·20	0·00	0·00	0·00	0·00	0·00	0·00	2·02	0·00	2·21	1·28
Medium	27·47	x 67·47	57·15	15·71	40·32	11·66	23·53	41·67	18·18	23·85	27·94	24·36
Above medium	50·55	31·33	35·71	49·29	x 41·94	41·67	50·00	40·74	47·48	47·69	50·74	48·72
Good to very good	x 20·88	0·00	x 7·14	x 35·00	17·74	x 46·67	x 26·47	x 17·59	x 32·32	x 28·46	x 18·38	x 25·64
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00
Season—												
August-mid-September	10·99	0·00	0·00	x 16·43	6·45	1·67	0·74	8·33	20·21	5·39	26·47	26·92
Mid-September to Mid-October	21·98	10·84	7·14	27·86	12·90	18·33	14·70	19·45	24·24	6·15	16·18	15·38
October-November	x 31·87	14·46	28·58	29·29	22·59	28·33	38·23	20·37	24·24	30·77	x 36·77	19·23
November-February	29·67	25·30	32·14	20·71	29·03	x 34·17	27·21	26·85	x 18·18	x 30·00	11·76	x 34·62
December-April	5·49	x 49·40	x 32·14	5·71	x 29·03	17·50	x 19·12	x 25·00	13·13	27·69	8·82	3·85
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00
Resemblance—												
In outward appearance	19·78	21·69	10·71	22·86	12·90	15·83	25·00	25·00	13·13	3·08	41·18	19·23
In flesh	36·26	56·62	21·43	47·14	20·97	18·23	40·44	71·30	52·53	23·85	46·32	29·49
In flavour	34·07	48·19	35·71	26·43	......	25·00	34·57	36·11	32·32	37·69	19·12	28·21
No resemblance	38·46	4·82	32·14	30·00	35·48	28·33	27·94	14·81	32·32	40·77	27·94	28·21
In whiteness of flesh only	5·49	......	......	1·43	......	......	......	......	5·05	......	......	......
In form and not colour	3·30	20·48	17·86	12·14	1·61	7·50	8·09	3·70	26·26	11·54	5·15	6·42
In colour and not form	2·19	0·00	3·57	7·86	......	17·50	1·47	30·56	2·02	0·77	2·21	25·64
In large seeds	......	66·27	......	......	46·77	......	......	......	......	......	......	......
In form only	......	2·41	10·71	......	......	......	2·94	......	......	......	......	......
In colour	......	12·05	......	......	8·07	......	13·24	......	......	......	......	......
In colour only	......	1·20	......	......	3·23	......	4·41	......	......	......	......	......

POMOLOGY.

M. B. Davis, B.S.A., Assistant in Charge.

The past season could not be termed a very good one for fruit crops. Late spring frosts materially reduced the yields of strawberries and in many sections seriously affected the apple crop. The orchards at the Central Farm were not troubled to any great extent, but the crop of apples harvested was somewhat lighter than usual, especially of such varieties as McIntosh and Fameuse. This was, no doubt, due to the fact that the orchard bore heavily the previous season. The crop of currants, gooseberries and raspberries was good. Americana plums yielded an average crop. Nigra plums gave a very light crop and European varieties gave about an average yield. The Nigra plums, which bloom earlier than the others, were caught by spring frosts, which almost completely destroyed the crop. The crop of grapes was the largest yet taken from the new vineyard, which is just about sufficiently established to bear average crops.

Practically no winter injury to fruit trees, fruit bushes or strawberry plants was experienced, the winter of 1914-15 being exceptionally mild for this district. Cherries bloomed profusely and set good crops, a thing seldom experienced at Ottawa.

INDIVIDUALITY IN APPLE TREES OR BUD HEREDITY.

In the report of last year mention was made of the bud heredity test under way here. Three lots of trees are being used in this test, all of them being Wealthy apple trees, but propagated from different sources. One lot is the progeny of a heavy yielding Wealthy apple tree in the old close-planted Wealthy orchard, another lot is propagated from a poor yielding tree in the same orchard, while the third lot is propagated from a heavy and regular bearing tree in the old Wealthy orchard.

At the end of last season there appeared to be a result in total yield in favour of the trees propagated from the heaviest yielders. This year the yield from the progeny of the poorest yielder far exceeds the yield from either of the other lots. The total yield for the four years, however, is still in favour of the heaviest and most regular bearer, although the yield of the progeny of the heavy bearer is below that of the poorest yielder. The tabulated results of this experiment to date are given below:—

Progeny of the Heaviest Bearing Wealthy Tree.

Record No.	Tree.	Wealthy Bud Heredity Experiment.		Heaviest Yielder.		Total.
		1912.	1913.	1914.	1915.	
6320	3/1	0·25 gal.	0·0 gal.	4· gal.	0·50 gal.	....
6321	3/2	0·0 "	0·0 "	7 "	1·25 "	....
6322	3/3	0·0 "	0·0 "	4 "	0·50 "	....
6323	3/4	0·0 "	0·0 "	4 "	0·25 "	....
6324	3/5	0·50 "	2·75 "	8 "	0·00 "	....
6491	13/3	0·50 "	1 apple.	7·5 "	0·75 "	....
6475	12/4	1·0 "	·25 gal.	4·0 "	0·00 "	....
Yearly totals	......	2·25 gal.	3 gal.	38·5 gal.	3·25 gal.	47 gal.

Ottawa.

PROGENY of the Poorest Bearing Wealthy Tree.

Record No.	Tree.	Wealthy Bud Heredity Experiment.		Poorest Yielder.		Total.
		1912.	1913.	1914.	1915.	
6337	4/1	0 gal.	·75 gal.	3 gal.	1·5 gal.	
6338	4/2	0 "	0 "	5 "	·75 "	
6339	4/3	0 "	0 "	6 "	4·5 "	
6340	4 4	0 "	0 "	3 "	5· "	
6341	4 5	·5 "	·25 "	5 "	3·5 "	
6479	12/8	0 "	0 "	9 "	0 "	
6490	13/2	0 "	0 "	4 apples	0 "	
Yearly totals		·5 gal.	1 gal.	31· gal.	15·25 gal.	47·75 gal.

PROGENY of the Heaviest and Most Regular Bearing Wealthy Tree.

Record No.	Tree.	Wealthy Bud Heredity Experiment.		Heaviest and Regular Bearer.		Total.
		1912.	1913.	1914.	1915.	
6354	5/1	2 apples.	3·25 gal.	3 gal.	1·75 gal.	
6355	5/2	3 "	2 apples.	7 "	3 apples.	
6356	5/3	0 "	0 "	3 "	1·75 gal.	
6357	5/4	0 "	0 "	3 "	0·50 "	
6358	5/5	0·5 gal.	2·75 gal.	10· "	2·0 "	
6476	12/5	0 apples.	1·75 "	5 "	0 apples.	
6481	12/10	2 gal.	10·0 "	9 "	0 "	
Yearly totals		2·75 gal.	17·75 gal.	40 gal.	6· gal.	66·50 gal.

KEEPING TEST OF SOME COMMERCIAL VARIETIES OF APPLES.

The following table gives in a brief manner the results of keeping tests with a number of commercial varieties of apples. As it is often necessary to know the average length of season of a variety together with its keeping qualities, this table should prove quite useful. Throughout this test notes were taken from week to week on the condition of the fruit, and as soon as the variety was seen to be past condition the test was discontinued for that particular variety, as its season was considered to be over. The last column gives the average length of season for each variety tested, while the preceding column gives an idea of the keeping qualities of the variety during the time it should remain in good eating condition. These apples were kept in a cool rather dry cellar such as any private person might have. The temperature averaged about 38° F. during the winter. The fruit was in open baskets, there being usually 50 specimens of each variety.

Year.	Variety.	Test began.	Out of Season	No. days in season.	% Rotted	Average Length of Season. Days.
1911-12	Baxter	24–X	15–V	202	74	
1912-13	"	1–XI	4–IV	155	20	
1913-14	"	10–XI	25–V	196	68	184
1911-12	Bethel	24–X	15–V	195	54	
1912-13	"	1–XI	4–IV	155	32	
1913-14	"	10–XI	6–IV	147	6	
1914-15	"	5–XI	6–V	182	4	170
1911-12	Canada Baldwin	24–X	1–V	189	54	
1912-13	"	1–XI	11–IV	162	40	
1913-14	"	10–XI	25–V	196	84	
1914-15	"	5–XI	1–IV	147	8	173
1912-13	Canada Red (Roseau)	1–XI	13–VI	225	14	
1913-14	"	10–XI	25–V	196	26	
1914-15	"	5–XI	27–V	204	16	208
1912-13	Fameuse	1–XI	3–I	64	0	
1913-14	"	10–XI	8–XII	28	0	
1914-15	"	5–XI	17–XII	42	0	45
1912-13	Haas	1–XI	3–I	64	8	
1914-15	"	5–XI	24–XII	49	2	56
1911-12	La Victoire	24–X	1–V	189	48	
1912-13	"	1–XI	2–V	183	28	
1913-14	"	10–XI	25–V	196	34	
1914-15	"	5–XI	22–IV	168	0	184
1911-12	McIntosh Red	24–X	13–III	140	74	
1912-13	"	1–XI	7–III	127	50	
1913-14	"	10–XI	23–II	105	56	
1914-15	"	5–XI	18–II	105	8	119
1911-12	McMahan White	24–X	24–I	92	36	
1912-13	"	1–XI	3–I	64	8	
1913-14	"	10–XI	5–I	56	18	
1914-15	"	5–XI	7–I	63	6	69
1911-12	Milwaukee	24–X	20–III	147	44	
1912-13	"	1–XI	21–II	113	6	
1913-14	"	10–XI	23–II	105	16	
1914-15	"	5–XI	28–I	84	0	112
1913-14	N. W. Greening	22–X	27–V	189	50	
1914-15	"	5–XI	29–IV	175	42	182
1911-12	Patten Greening	24–X	10–I	78	6	
1912-13	"	1–XI	10–I	71	10	
1913-14	"	10–XI	12–I	63	14	71
1912-13	Ribston Pippin	1–XI	5–II	97	56	
1913-14	"	10–XI	1–XII	21	0	59
1911-12	Scott Winter	24–X	1–V	189	50	
1912-13	"	1–XI	18–IV	169	10	
1913-14	"	10–XI	13–IV	154	0	
1914-15	"	5–XI	1–IV	147	2	165
1911-12	Stone	24–XI	8–V	165	64	
1912-13	"	1–XI	2–V	183	72	
1913-14	"	10–XI	11–V	182	10	
1914-15	"	5–XI	22–IV	168	26	174
1911-12	Winter St. Lawrence	24–10	10 I	78	80	
1912-13	"	1–XI	24–I	85	10	
1913-14	"	10–XI	5–1	56	28	73
1912-13	Wolf River	1–XI	24–1	85	30	
1913-14	"	10–XI	19–I	70	46	
1914-15	"	5–XI	24–XII	48	16	68
1911-12	Rochelle	24–X	10–I	78	100	
1912-13	"	1–XI	7–II	99	100	
1913-14	"	10–XI	2–II	84	70	
1914-15	"	5–XI	4–III	119	100	95

DATES OF BLOOMING OF DIFFERENT VARIETIES OF APPLES.

In planting or laying out a young orchard, the question of the system of arranging the different varieties is one of the important considerations. It is known that certain varieties of apples are practically self-sterile, and in fact, some investigators have gone so far as to state that very few varieties of apples are self-fertile to any extent. This opens up the question, therefore, of whether it is really advisable to plant large blocks of only one variety of fruit, or whether it is not better to have two or three varieties in the same area. Of course, there are many large blocks of a single variety which are bearing excellent crops, thus showing that these single variety areas can, in some cases, yield good results. On the other hand, one variety areas have been known never to produce a really profitable crop, while in the same neighbourhood, a number of trees of the same variety planted among other varieties have continually produced profitable yields. The conclusion, therefore, is that while some varieties are capable of self-pollination under field conditions, other varieties are not capable of such to a profitable extent.

To date, comparatively little is known regarding which varieties are, and which are not, capable of self-fertilization, so that there is no very accurate key or list to which a grower can turn to obtain information on this point. Some information will be found in that part of this report dealing with plant breeding. It is known that practically any commercial variety of apples will cross with or fertilize any other variety. This then suggests the planting in close proximity of those varieties which bloom together, that is come into full bloom on the same day. It will be readily seen that a variety which does not come into bloom until a day or so after another particular variety, stands less chance of being fertilized by that variety, than if they had both bloomed on the same day. As notes on the dates of blooming have been taken at the Central Farm for a number of years, a source of information is at hand which will give a good idea as to the difference in the dates of blooming of early and late varieties.

Following is a table, showing the date when each variety began to bloom, when in full bloom and when out of bloom during the last five years.

DATES of Apple Bloom.

Variety.	Began to Bloom.					Full Bloom.					Out of Bloom.				
	1911	1912	1913	1914	1915	1911	1912	1913	1914	1915	1911	1912	1913	1914	1915
Baxter	17-v	24-v	6-v	21-v	....	20-v	28-v	15-v	23-v	....	26-v	2-vi	30-v	28-v	....
Bethel	17-v	25-v	10-v	22-v	13-v	20-v	29-v	17-v	24-v	20-v	24-v	3-vi	30-v	30-v	29-v
Canada Baldwin	16-v	25-v	8-v	22-v	12-v	19-v	28-v	14-v	24-v	19-v	24-v	2-vi	28-v	31-v	29-v
Canada Red	16-v	24-v	10-v	22-v	13-v	19-v	27-v	17-v	24-v	19-v	24-v	2-vi	30-v	30-v	27—v
Duchess of Oldenburg	16-v	22-v	6-v	19-v	11-v	19-v	26-v	15-v	22-v	19-v	24-v	31-v	29-v	27-v	27-v
Dudley	15-v	23-v	6-v	19-v	11-v	19-v	28-v	15-v	22-v	19-v	24-v	3-vi	30-v	29-v	27-v
Fameuse	16-v	24-v	8-v	22-v	11-v	20-v	28-v	16-v	24-v	19-v	26-v	3-vi	28-v	30-v	27-v
Gano		24-v	10-v	22-v	12-v	......	28-v	17-v	24-v	20-v	......	2-vi	31-v	28-v	27-v
Haas	15-v	23-v	6-v	21-v	12-v	19-v	27-v	15-v	24-v	20-v	24-v	2-vi	30-v	30-v	27—v
Langford Beauty	16-v	24-v	6-v	21-v	12-v	19-v	29-v	15-v	23-v	19-v	24-v	3-vi	29-v	29-v	27-v
La Victoire		23-v	6-v	20-v	11-v	......	27-v	14-v	23-v	20-v	......	2-vi	30-v	28-v	27-v
McIntosh Red	16-v	25-v	8-v	23-v	13-v	20-v	28-v	17-v	26-v	19-v	25-v	3-vi	29-v	31-v	29-v
McMahan	16-v	25-v	9-v	23-v	13-v	19-v	29-v	17-v	25-v	20-v	22-v	4-vi	29-v	31-v	29-v
Milwaukee	16-v	24-v	6-v	20-v	19-v	20-v	26-v	15-v	23-v	19-v	25-v	31-v	29-v	30-v	27-v
North Western Greening	16-v	25-v	10-v	22-v	....	19-v	29-v	17-v	24-v	....	24-v	3-vi	29-v	29-v	....
Patten Duchess	14-v	23-v	5-v	19-v	11-v	18-v	27-v	9-v	22-v	19-v	24-v	2-vi	26-v	28-v	27-v
Patten Greening	15-v	23-v	6-v	20-v	11-v	19-v	25-v	15-v	22-v	19-v	24-v	31-v	30-v	28-v	27-v
Ribston Pippin	16-v	24-v	9-v	21-v	12-v	19-v	29-v	17-v	23-v	20-v	24-v	3-vi	31-v	29-v	27-v
Scott Winter	15-v	24-v	8-v	21-v	11-v	18-v	29-v	16-v	24-v	19-v	22-v	3-vi	28-v	29-v	27-v
Stone	17-v	25-v	9-v	22-v	13-v	20-v	28-v	17-v	24-v	20-v	26-v	3-vi	30-v	29-v	29-v
Switzer	5-v	23-v	7-v	19-v	10-v	18-v	26-v	14-v	22-v	19-v	24-v	29-v	29-v	28-v	26-v
Tetofsky	......	22-v	....	18-v	....	....	26-v	....	22-v	....	....	31-v	....	28-v	....
Yellow Transparent	16-v	23-v	8-v	19-v	....	19-v	27-v	18-v	22-v	....	22-v	31-v	29-v	27-v	....
Wealthy	16-v	24-v	6-v	20-v	11-v	20-v	28-v	14-v	23-v	20-v	25-v	2-vi	30-v	28-v	27-v
Winter St. Lawrence	16-v	23-v	6-v	20-v	12-v	20-v	26-v	15-v	23-v	20-v	25-v	31-v	31-v	28-v	27-v
Wolf River	17-v	25-v	8-v	21-v	12-v	20-v	28-v	16-v	23-v	20-v	26-v	2-vi	30.v	29-v	27-v
Alexander	16-v	24-v	7-v	21-v	12-v	20-v	27-v	18-v	23-v	26-v	24-v	1-vi	30-v	27-v	27- v
Lowland Raspberry	16-v	24-v	8-v	21-v	11-v	20-v	26-v	17-v	24-v	17-v	24-v	1-vi	29-v	27-v	26-v
Red June	15-v	....	7-v	22-v	12-v	19-v	....	17-v	24-v	17-v	23-v	....	30-v	28-v	27-v
Scarlet Pippin	16-v	23-v	6-v	20-v	11-v	16-v	26-v	14-v	23-v	13-v	24-v	31-v	30-v	28-v	26-v
Hibernal	16-v	24-v	7-v	20-v	11-v	19-v	27-v	17-v	23-v	16-v	24-v	2-vi	29-v	28-v	26-v

To summarize the full bloom portion of the foregoing table it is found that all the varieties on the average came into full bloom within a period of five days. This is not as much difference as might be expected between early and late varieties, but still a difference of sufficient importance, perhaps, to prevent some of the earlier varieties from being appreciably pollinated by some of the later ones.

Following are three lists, giving those varieties which bloom on the same date in separate groups:—

LOT No. 1.

Scarlet Pippin..	All bloom on the average on May 19.
Yellow Transparent..	
Tetofsky..	

LOT No. 2.

Duchess..	All bloom on the same day on the average on May 20
Patten Greening..	
Switzer..	
Blushed Calville..	
Hibernal..	
Red June..	

LOT No. 3.

Canada Baldwin..	These varieties bloom on the average on May 21.
Canada Red..	
Dudley..	
Haas..	
Langford Beauty..	
La Victoire..	
Milwaukee..	
Scott Winter..	
Wealthy..	
Winter St. Lawrence..	
Wolf River..	
Charlamoff..	
Lowland Raspberry..	

LOT No. 4.

Baxter..	These varieties all bloom on the average on May 22.
Bethel..	
Fameuse..	
Gano..	
McIntosh..	
North Western Greening..	
Ribston..	
Stone..	
Alexander..	

PRACTICAL APPLICATION OF THE FOREGOING.

Until some concrete evidence is available regarding the sterility of all the different commercial varieties and the affinity of those varieties for one another, it would appear (1) that it is a wise policy or precaution for orchardists to plant a number of varieties in the same area, rather than to separate the varieties into different blocks; (2) that it is advisable to plant those varieties near each other which bloom on the same day. Thus a prospective planter could, in laying out his orchard, plant the varieties from Group No. 1 close to each other, those from Group No. 2 in another block close to each other and so on. In this way, a precaution against the loss of crop due to sterility could easily be taken.

A FEW NEW OR NOT WELL-KNOWN VARIETIES OF FRUITS.

PLUMS.

As numerous communications are received requesting information on the varieties of plums adapted to northern and colder districts, a few notes calling attention to the best of the hardy varieties should not be amiss.

The hardy plums that may be recommended for the colder parts of Canada divide themselves into three groups, viz., the Americana, the Nigra and the Hybrids.

Americana Plums: The Americana plums, although not in a class with the European varieties for quality, have been improved considerably the last few years and offer a few good varieties for table use and culinary purposes. The chief objection to this class of plum is its thick skin and in very many instances its watery flesh, which is distinctly dffierent from the thin-skinned, meaty European varieties. Among the best of this group are:—

(1) Brackett, which is of good quality, large in size, firm, but with a tough thick skin, very good for dessert use.

(2) (Admiral) Schley, of very good quality, good size, skin thinner than Brackett. Probably the best Americana in quality.

(3) Terry, this variety is well worth a trial, being classed with the two previous varieties as of good quality and size. It possesses the advantage of a thin although tough skin together with handsome appearance, firm flesh and good quality.

Nigra Plums.—The varieties of the Nigra group are distinct from the Americanas by the fact that they possess a much thinner and more tender skin. They are more useful on this account for culinary purposes. On the other hand, their flavour is not so pleasing for eating out of hand. On this account, their value is often overlooked by people who gauge a plum's merit only by its dessert qualities. The Nigra plums are also earlier than the Americanas. Among the best is Cheney, a large plum with a moderately thin skin which is only moderately tough, good quality and moderately rich in flavour..

Hybrids.—Among the Hybrid plums is one which is a distinct acquisition to the hardy fruits of North America. This is Omaha, a plum of medium size, handsome appearance, early, very good quality, thin and tender skin, hardy and productive. This variety is one that should be largely planted by the plum growers who are obliged to depend upon the hardy sorts. It is excellent for both dessert and culinary purposes.

APPLES.

Red June.—As an early hardy apple of good quality, Red June stands out quite prominently. As grown on this Farm, it is an excellent keeper for such an early fruit, thus rendering it possible to ship this variety with comparative safety. Its deep red colour is also a noteworthy feature for such an early variety. Its average season is about two weeks later than Crimson Beauty, the next mentioned variety. It is generally ready for shipping during the first week of August. A description follows:—Medium in size; conical; yellow, almost completely covered with a deep, crimson red; skin smooth, thin and tender; flesh mellow, tender and moderately juicy; flavour sub-acid, very pleasing. Further experience in regard to hardiness is required.

Crimson Beauty.—Probably the earliest variety of apple tested at this Farm. Although rather coarse and poor in quality, it is noteworthy on account of earliness and high colour.

Description.—Medium in size; oblate, slightly angular; green covered with bright crimson especially on sunny side; skin tough and thick; flesh yellowish, coarse; flavour acid; quality medium.

GRAPES.

Peabody.—Among the numerous varieties of grapes tested at Ottawa few are sufficiently early to ripen every year in the short season of that district. One of the best of these short seasoned varieties is Peabody, which is a blue grape of medium size; quality good; flavour briskly sub-acid. This variety is well worth a trial in the northerly districts. The skin is thin and robins are very fond of it and often destroy many fruits.

OTTAWA.

Cottage.—This grape may be recommended only on account of its extreme earliness and relatively good quality. On account of its dropping habit, it is useless as a commercial grape. For home planting, however, it is especially recommended. It is a large, light blue grape, of very mild, sweet and pleasing flavour.

STRAWBERRIES.

Much attention has been paid in the past to variety testing of strawberries at this Farm and the result of a two years' test is given in the following pages. The results here recorded are for 1912 and 1914. The fruit table (No. 1), gives the best fifty varieties of strawberries, based on average yield for the two years. Table No. 2, gives a list of the best newer varieties, which fruited for the first time in 1914. For comparison, the yields of a few well-known varieties have been appended to this table.

In determining which is the best variety of strawberries, we cannot go entirely by yield, there are other factors to be considered, such as season, quality, firmness, appearance and ability to retain size for a considerable time.

Season.—Refers to the time when the variety yields its crop, such as whether it is an early, main crop, or late variety. As the markets at the commencement of the strawberry season invariably offer higher prices for fruits than they do a few days later, a grower is always anxious to have a good crop of early fruit in order to command the top prices. In selecting an early variety, therefore, it might be advisable to sacrifice quality and total yield for the sake of earliness. On the other hand, in selecting a main crop variety, a better balance of all these factors is necessary for the main crop berry is in keener competition than the early berry and to yield profitable returns must be a good all round berry. That is to say, it should be a good yielder, a good shipper, must have good appearance and should be at least medium in quality.

Besides early and main crop varieties, there are many berries which yield a considerable portion of their crop at the very latter end of the season. As at the beginning of the season, the market then is quite often much higher than during the height of the season, so that late berries often pay as well as early ones.

As the records at the Central Farm show the date of each picking of each variety, together with the amount picked, it has been possible to average the varieties according to their merits as early or late berries. Table No. 3 gives the standing of the best early varieties, arranged in order of total yield during the first week of the strawberry season. This method or system of arrangement has been adopted in preference to the arrangement by the date of the first ripe fruit on account of the fact that many varieties, which ripen a few days earlier than some others, will not continue to yield early fruit in any quantity, and, therefore, are misleading. As the season is dated from the first picking made from the plantation, all varieties are thus fairly compared as to relative earliness. Table No. 4, on the other hand, gives the standing of the best late varieties, arranged in order of total yield during the last week of the strawberry season, the end of the season dating from the last picking made from the plantation as a whole. Over three hundred and fifty varieties were in this test. These tables, therefore, convey a fairly accurate idea of the points of merit of the different varieties in so far as earliness, lateness and total yield are concerned, while Table No. 5, gives a test of those varieties which maintain their size for the longest period.

This leaves the points of quality, attractiveness, and firmness to be discussed.

As space will not permit of a discussion of these points for all varieties, lists have been appended of the varieties recommended for different purposes and in connection with these lists, notes are attached concerning these three points. If a variety, which is a high yielder, does not appear in these lists, it has been left out on account of its very poor quality or some other very important point in which it lacks.

OTTAWA.

TABLE No. 1.—Best Yielding Varieties of Strawberries, based on total average yield for 1912 and 1914.

Variety.	Yield per acre.		1st ripe fruit.		Length of season in days	Height of season in days	No. pickings.	Retained size days.
	lb.	oz.	1912	1914				
1 Parsons Beauty, per	12053 –	8	27–vi –	30–vi	20·5	4·5	8·5	14·5
2 Mele, imp	12040 –	9	26–vi –	27–vi	22·5	6·5	9	14·5
3 Cordelia, per	12016 –	1	24–vi –	24–vi	27	11	10·5	16
4 Dora, imp	11624 –	14	24–vi –	27–vi	23·5	9·5	9·5	10
5 Mariana, per	10907 –	13	27–vi –	28–vi	22·5	12	9·5	15
6 Bisel, imp	10872 –	1	25–vi –	28–vi	23·5	8·5	9·5	14·5
7 Greenville, imp	10068 –	4	24–vi –	26–vi	25	7	10	20·5
8 Commander, per	10049 –	11	25–vi –	26–vi	23·5	9·5	8·5	18·5
9 New Globe, per	9977 –	19	27–vi –	30–vi	24·5	8·5	9·	19·5
10 Pocomoke, per	9916 –		28–vi –	29–vi	20·5	4·5	9·	20·5
11 Buster, imp	9935 –	7	27–vi –		26	11·5	9·5	20
12 Valeria, per	9836 –	10	26–vi –	27–vi	26·5	7	11	12
13 Clyde, per	9805 –		24–vi –		25	8	11	21
14 Bederwood, per	9779 –	14	19–vi –	21–vi	29	6·5	12	20
15 Daniel Boone, imp	9402 –	5	25–vi –	27–vi	24	11	9·5	11
16 Lavinia, per	9384 –	8	26–vi –	27–vi	26·5	8·5	9·5	12·5
17 Arnout, per	9296 –	14	24–vi –	27–vi	26	11	9·5	18
18 Maggie, imp	9232 –	2	19–vi –	24–vi	27·5	8·5	11	14·5
19 Lovett, per	8924 –	4	24–vi –	26–vi	25	10	10	15
20 Williams, per	8903 –	14	24–vi –	27–vi	23·5	7·5	10	15
21 Sutherland, imp	8669 –	2	24–vi –	27–vi	25	8	9·5	14·5
22 Fountain, per	8665 –	10	24–vi –	26–vi	22·5	5·5	8·5	15
23 Cassandra, per	8651 –	6	24–vi –	27–vi	23·5	16·5	9	12·5
24 Hermia, per	8645 –	8	27–vi –		25	10	9·5	15
25 Thompson Earliest, per	8612 –	5	19–vi –	21–vi	27·5	6·5	11·5	16·
26 Sample, imp	8611 –	2	24–vi –	25–vi	25·5	16·5	9·	20
27 Abundance, imp	8570 –	2	24–vi –	27–vi	24·5	9·5	10·5	15·5
28 Brilliant, imp	8501 –	5	27–vi –	29–vi	25	8	9	13·5
29 Afton, imp	8485 –	14	22–vi –	23–vi	25	9	9·5	11
30 Morgan Favourite, per	8371 –	11	29–vi –	30–vi	19	7	8	13·5
31 Ruby, per	8324 –	11	26–vi –	27–vi	23·5	8·5	9·5	20·5
32 New Dominion, per	8293 –	14	26–vi –	29–vi	22	9	8·5	11·5
33 Howard No. 2, imp	8246 –	14	22–vi –	24–vi	27	10·5	10·5	16
34 Daisy, imp	8243 –	10	24–vi –	27–vi	24·5	13·5	9	18
35 Hattie Warfield, imp	8197 –	7	24–vi –		26	8	10·5	16
36 Warfield No. 2, imp	8117 –	7	23–vi –	26–vi	23	8·5	8·5	13·5
37 Portia, imp	8005 –	7	27–vi –	30–vi	23·5	11	9	12
38 Irene, imp	7775 –	5	24–vi –	27–vi	23·5	8·5	9·5	15·
39 Scofield Seedling, per	7738 –	13	27–vi –		22	7·5	9·5	15·5

40 King Edward, per.	7686 – 3	25–vi – 27–vi	23	8·5	9	10·5
41 Ophelia, per.	7539 – 12	27–vi –	25	6·5	10	14
42 Carrie, imp.	7435 – 8	26–vi – 27–vi	23·5	6·5	9·5	15·5
43 Viola, imp.	7405 – 8	26–vi – 30–vi	23·5	9	9	14·5
44 Seedling from Livingstone, per.	7397 – 11	27–vi – 28–vi	22·5	9	8·5	20
45 Howard No. 17, per.	7290 – 12	19–vi –	28	10·5	11	20·5
46 From A. Shaw, per.	7285 – 6	27–vi – 1–vii	20·5	8	7·5	12
47 Hatch Experiment Station, imp.	7191 – 5	27–vi – 30–vi	20·5	8·5	8	13
48 Bismarck, per.	7041 – 3	26–vi –	27	6	9·5	15
49 Quality, per.	7031 – 8	26–vi –	23	9	8·5	14
50 Marie, imp.	7016 – 14	24–vi – 27–vi	24·5	8·5	9·5	17

EXPLANATION OF THE TABLE.

The column marked "1st ripe fruit" shows the range between dates of ripening for the two years; "Length of season" refers to the number of days between first and last pickings; "Height of season" gives in days from the first picking the average date or time when the largest picking of the season was made; "No. of pickings" simply refers to the average number of pickings for the two years; "Retained size" refers to the average number of days that each variety kept up its size.

The Parsons Beauty which heads the list is a fine variety and is now grown extensively in some districts. Mele is a very productive berry but is too soft for distant shipment. Cordelia is a promising new variety originated at the Experimental Farm, Ottawa, as is the Mariana. Dora has done well at Ottawa for many years but has not been much planted. The Bisel and Greenville have continued to yield well at Ottawa for many years and are two good varieties. The same variety rarely heads the list two years in succession as it is practically impossible to have exactly the same relative stand of plants each year unless they are grown by the hill system, which has not been found satisfactory at Ottawa. It is therefore desirable to have several years' experience with each sort so that a good average may be obtained.

It is interesting to note that in this list of fifty most productive sorts, there are fifteen varieties that have been under test twenty years and more, the Bisel and Greenville being two of these, which shows that these two sorts are very vigorous and productive.

TABLE No. 2.

This table gives a list of the most promising of the newer varieties grown in 1914, arranged in order of total yield. Varieties marked with an asterisk are older varieties inserted for sake of comparison. All yields in this table are computed from 1914 records.

No.	Variety.	Yield per acre.	1st ripe fruit.	Length of season.	Height of season.	No. of pickings.	Holds size tor.	Remarks.
		lb. oz.		days.	days.		days.	
1	*Pocomoke, per	12640 - 1	29 - vi	21	3	10	23	Above medium, very firm.
2	*Splendid, per	12056 - 13	19 - vi	23	4	11	15	Soft and poor colour.
3	*Sample, imp	11391 - 13	25 - vi	27	23	11	25	Med. quality, moder. firm.
4	Bradley, per	10488 - 1	27 - vi	23	11	10	18	
5	Monroe, per	10462 - 2	26 - vi	26	13	11	23	Very good quality.
6	Rewastico, per	9645 - 6	30 - vi	20	6	9	13	Med. quality.
7	Winner, per	7454 - 5	27 - vi	25	9	11	19	
8	Gov. Forte, per	9334 - 3	27 - vi	25	7	11	13	Good quality.
9	Sou Pet	8932 - 5	26 - vi	26	12	11	23	Poor quality.
10	Helen Davis, per	8478 - 9	27 - vi	25	9	11	19	Excellent quality.

*For comparison with new varieties.

Of these seven newer varieties, Monroe, Gov. Forte and Helen Davis are the most promising from the standpoint of both yield and quality. None of these varieties is promising as regards earliness; they are all main crop varieties.

It has been found that notwithstanding the many new sorts that are introduced every year it is only now and then that there is one which compares favourably with those which have become popular through long years of experience. It will be seen in this table that none of the newer sorts yields as well as the Pocomoke, Splendid and Sample, which are very productive berries. It is only by introducing new sorts, however, that better ones will be obtained, and it is the duty of the Experimental Farms to find out which of the new ones are as good or better than the old ones.

TABLE No. 3.—List of best yielding early varieties of Strawberries based on a two years' average of the yield for the first week of the strawberry season.

No.	Variety.	Average yield per acre for 1st 7 days.	Note on size and quality.	Colour.	Firmness.	2 yr. average of total yield.
		lb. oz.				lb. oz.
1	Thompson Earliest, per	2644 – 14	above med., med.	deep pale red	rather soft	8617 – 5
2	Splendid, per	2458 – 5	good	pale red	mod. firm	4840 – 9
3	Bederwood, per	2391 – 13½	above med	bright red	firm	9779 – 15
4	Maggie, imp	2388 – 9	medium	deep red	mod. firm	9232 – 2
5	Excelsior, per	2358 – 10	too acid	bright red	mod. firm	4586 – 14
6	Bonita, imp	1680 – 7	poor and small	dark red	soft	9317 – 9
7	Clyde, per	1523 – 4	large and good	pale red	firm	9805 – 0
8	Howard No. 17, per	1497 – 5	large and below med.	bright red	firm	7290 – 12
9	Wildwood, imp	1472 – 15½	large and good	bright scarlet	mod. firm	3725 – 10
10	Fairfield, per	1423 – 9	med. size and mod. good.	good colour		3300 – 14
11	Chas. Newman, per	1337 – 5½				4800 –
12	Hawaii, per	1181 – 13½	poor	poor, not desirable		5501 – 3
13	Goree, per	1137 – 8½				3279 – 15
14	Wesley, per	1119 – 11½				6761 – 2
15	Lester Lovett, per	1114 – 14	med. and good	dark red		10499 – 7
16	Lucetta, per	1112 –				4095 –
17	Miranda, per	1047 – 11	large, good	dark red	firm	5828 – 3
18	Howard No. 2, imp	1019 – 4½	med., above med	bright scarlet	only mod. firm	8246 – 14
19	Hero, per	1007 – 15	large and above med.	rather pale	mod. firm	6290 – 6
20	Mrs. Cleveland, imp	992 – 3½	small and poor	pale red		4894 – 13

Better early varieties are very much needed, as none of those in the above table which are near the head of the list is entirely satisfactory. For many years the Beder Wood has been the most reliable early berry and is still being grown quite extensively, but it soon gets small. Excelsior is grown in some places, but it is too acid to be very desirable. Splendid gives a large percentage of early fruit but it is not quite attractive enough in colour, and Thompson Earliest is rather soft.

TABLE No. 4.—List of best bearing late varieties, average for two years of the yield during the last seven days of the picking season.

No	Variety.	Average yield per acre for last 7 days.	Note on size and quality.	Colour.	Firmness.
		lb. oz.			
1	Beidler	996 – 15	large and medium	bright red	firm.
2	Buster, imp	979 – 4	large, above medium	bright pale red	firm.
3	Wm. Belt, per	797 – 3	large and very good	bright red	firm.
4	July, imp	771 – 6	medium and poor	pale red	soft.
5	Ruby, per	737 – 13	large and medium	dark red	medium.
6	Sample, imp	641 – 11	large and medium	bright red	mod. firm.
7	Cordelia, per	606 –	large and medium	bright red	firm.
8	Glen Mary, per	476 – 10	large and medium	deep red, pale tip	firm.

It has been found that the most profitable late berries are those which give a large crop in mid-season, but continue cropping until late and keep up the size of fruit. Those which do not ripen any fruit until late are usually caught by the dry weather before a large proportion of the fruit ripens, with the result that the crop is small. Buster, Sample and Glen Mary are all of this character. At Ottawa the Wm. Belt has not proved very productive, but it is one of the best of the later sorts so far as appearance, size and quality are concerned.

TABLE No. 5.—List of best varieties for holding size, based on a two years' average

Variety.	Retained size for Days.
1. Clyde, per	21
2. Glen Mary, per	20·5
3. Highland, imp	20·5
4. Howard No. 17, per	20·5
5. Greenville, imp	20·5
6. Abington, per	20·5
7. Pocomoke, per	20·5
8. Ruby, per	20·5
9. Sample, imp	20
10. Beder Wood, per	20
11. Beidler, imp	20
12. Buster, imp	20
13. Hood River, per	20
14. Uncle Jim, per	20
15. New Globe, per	19·5

WELL-KNOWN VARIETIES OF STRAWBERRIES RECOMMENDED FOR PLANTING, ARRANGED IN ORDER OF GENERAL MERIT.

Early Varieties.—Beder Wood, per.; Splendid, per.; Thompson Earliest, per.; Excelsior, per.

Main Crop Varieties.—Parsons Beauty, per.; Greenville, imp.; Pocomoke, per.; Buster, imp.; Clyde, per. (suffers during drought); Williams, per.; Sample, imp.; Senator Dunlap, per.

Late Varieties.—Buster, imp.; Wm. Belt, per.; Sample, imp.; Glen Mary, per.

In addition to the above, the following not so well-known varieties are especially recommended for main crops. These varieties are very productive, of good quality and colour and are moderately good shippers. Where obtainable they are well worth a trial. The list is as follows: Dora, imp.; Bisel, imp.; Valeria, per.; Portia, imp.; Mariana, per.; Lavinia, per.; Hermia, per.

GREENHOUSE GRAPES.

The growing of grapes under glass by the pot culture method was dealt with in last year's report, but in order that persons interested may keep in touch with the progress these pot-grown vines are making, a record of their production during this past season is given together with their total production since the time of starting the experiment. As the individual yield of each vine is given, a clearer conception of the possibilities of this method is obtained.

It will be noticed that there is a considerable difference between the yield of different varieties, also that different vines of the same variety show a distinct individuality in yielding habit. Black Hamburgh and Foster Seedling are distinctly the leaders in yield. The latter is one of the earliest and the former a mid-season grape. Black Hamburgh is one of the best in quality and Foster Seedling may be termed good.

From experience at this Farm, the following varieties of hot house grapes are recommended:—

For Commercial Planting—

Early: Foster Seedling.
Late: Black Hamburgh.

For Home Use—

Early: Foster Seedling and Buckland Sweetwater.
Late: Black Hamburgh, Muscat Hamburgh and Muscat of Alexandria.

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GRAPES IN GREENHOUSE.

Variety.	No. of vine.	Yield 1914.	Yield 1915.	Total Yield.	Average total yield per vine.	Average yearly yield per vine.
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Gros Colman	1	4 - 12	1 - 1	5 - 13		
Gros Colman	43	- 13	1 - 2	1 - 15		
Gros Colman	47	2 - 11		2 - 11		
Total		8 - 4	2 - 3	10 - 7	3 — 7·5	1 - 12
Frankenthal	2	7 - 4	5 - 10	12 - 14		
Frankenthal	30	7 - 14	14 - 13	22 - 11		
Total		15 - 2	20 - 7	35 - 9	17 - 12·5	4 - 7
Buckland Sweetwater	3	4 - 4	1 - 8	5 - 12		
Buckland Sweetwater	10	4 -	1 - 4	5 - 4		
Total		8 - 4	2 - 12	11 -	5 - 8	1 - 6
Muscat Hamburgh	4	5 - 8	7 - 7	12 - 15		
Muscat Hamburgh	33	5 -	- 7	5 - 7		
Muscat Hamburgh	37	4 - 8	1 - 10	6 - 2		
Muscat Hamburgh	41		11 - 9	11 - 9		
Total		15 -	21 - 1	36 - 1	9 -	4 - 8
Madresfield Court	5	5 - 10		5 - 10		
Madresfield Court	11	2 -		2 -		
Madresfield Court	38	3 - 4	2 - 7	5 - 11		
Madresfield Court	44	1 -		1 -		
Total		11 - 14	2 - 7	14 - 5	3 - 9	1 - 12·5
Foster Seedling	6	5 - 4	10 - 12	16 -		
Foster Seedling	12	8 - 14	4 - 4	13 - 2		
Foster Seedling	19	5 - 3	4 -	9 - 3		
Foster Seedling	39	6 - 13	13 - 1	19 - 14		
Total		26 - 2	32 - 1	58 - 3	14 - 8·75	7 - 4·37
Black Hamburgh	7	10 - 5	9 - 12	20 - 1		
Black Hamburgh	8	3 - 14	6 - 4	10 - 2		
Black Hamburgh	20	6 - 15	6 - 15	13 - 14		
Black Hamburgh	28	7 - 5	8 - 6	15 - 11		

Black Hamburgh	31	7 –	11 – 2	18 – 2		
Black Hamburgh	40	7 – 5	17 – 11	25 –		
Total	....	42 – 12	60 – 12	102 – 14	17 – 2·33	8 – 9·16
Gros Maroc	9	3 – 14	1 – 8	5 – 6		
Gros Maroc	35	4 – 9	5 – 7	10 –		
Total	....	8 – 7	6 – 15	15 – 6	7 – 11	3 – 13·5
Mrs. Pearson	13	2 –	– 13	2 – 13		
Mrs. Pearson	32	4 – 3	....	4 – 3		
Total	....	6 – 3	– 13	7 –	3 – 8	1 – 12
Alnwick Seedling	15	1 –	1 – 3	2 – 3		
Alnwick Seedling	29	1 – 8	....	1 – 8		
Total	....	2 – 8	1 – 3	3 – 11	1 – 13·5	– 14·75
Black Alicante	17	3 – 3	....	3 – 3		
Black Alicante	46	6 – 8	....	6 – 8		
Total	....	9 – 11	....	9 – 11	4 – 13·5	2 – 6·75
Mrs. Pince	18	1 –	....	1 –		
Mrs. Pince	45	1 –	....	1 –		
Total	....	2 –	....	2 –	1 –	– 8
Muscat of Alexandria	21	1 – 8	1 – 1	2 – 9		
Muscat of Alexandria	22	2 – 8	3 – 14	6 – 6		
Muscat of Alexandria	23	2 –	3 – 8	5 – 8		
Muscat of Alexandria	24	3 –	8 – 1	11 – 1		
Total	....	9 –	16 – 8	25 – 8	6 – 6	3 – 3
Lady Downes Seedling	25	2 – 7	1 – 8·5	3 – 15·5		
Lady Downes Seedling	26	2 – 8	2 – 5	4 – 13		
Total	....	4 – 15	3 – 13·5	8 – 12·5	4 – 6·2	2 – 3·1
Prince of Wales	27	4 – 12	....	4 – 12		
Prince of Wales	36	3 – 4	....	3 – 4		
Total	....	8 –	....	8 –	4 –	2 –

OTTAWA.

FURTHER EXPERIMENTS WITH ORCHARD HEATERS AND FROST PROTECTION.

Experimental work in frost protection was continued this past season. The results bear out our former conclusions that orchard heaters are an adequate and reliable protection against frost. This season's work was conducted on a somewhat larger scale than last season's work, a number of different types of heaters being used and experiments being conducted in the orchard as well as in the strawberry patch.

RESULTS OBTAINED IN THE ORCHARD.

On the night of May 20, the heaters were lighted only in the young close-planted Wealthy orchard. Sixty-three Competition heaters were used in this experiment, these being distributed over an area of 32,564 square feet. The heaters were, therefore, used at the rate of eighty per acre. At 1 a.m. an alarm came in that the temperature had reached 34 degrees Fahr. and by 1.30, when the heaters were lighted, it had fallen to 32 degrees. The ground temperature that night fell as low as 31 degrees outside the orchard, while the ground temperature inside the orchard was never below 34 degrees after the heaters were lighted. At three feet from the ground, the temperature outside was 32 degrees, while inside it never fell below 36 degrees after lighting the heaters.

On May 27, the heaters were lighted at midnight when the ground temperature was 32 degrees, and 34 degrees was registered three feet above the ground. By 2 o'clock the temperature outside stood at 28 degrees on the ground and 32 degrees three feet above the ground, while inside the ground temperature was 33 degrees and the temperature three feet above the ground 37 degrees. On this night only forty-two heaters were used at the rate of sixty heaters per acre. This demonstrated that, in an orchard of one acre area sixty heaters of the Competition type are capable, under certain conditions, of raising the temperature of the air surrounding the trees 9 degrees. This rise would not be experienced on an open piece of land without the canopy of trees to act as protection against radiation; in fact it requires twice that number of heaters to cause a smaller rise than 9 degrees. To illustrate the difference between heating an orchard and a ground crop when the latter is situated in the open, forty-two heaters of the same size and type as the Competition were placed on an area of 15,750 square feet, or in other words, the heaters were distributed at the rate of 120 heaters to the acre. On the night of May 27 these heaters were lighted at the same time the heaters in the orchard were lighted. The minimum ground temperature inside the heated area was 28 degrees for about one-half hour at 2.30 a.m., quickly rising to 32 degrees, the outside temperature remaining at 28 degrees until 4 o'clock. Comparing this with the orchard temperature, it will be recalled that the ground temperature in that area never fell below 33 degrees, and this with only half the number of heaters per acre. In addition, a note was taken that just outside the heated orchard area the ground was frozen stiff, while inside the area no sign of frost was evident on the ground. Although the ground inside the heated area was not actually frozen in the second case, signs of frost were evident as a result of the half-hour when the temperature went to 28 degrees. The temperature at three feet above the ground was, of course, much higher, it not going below 33 degrees and then only for a short time, then rapidly rising to 34 degrees. It will be recalled that in the orchard the temperature three feet from the ground did not go below 37 degrees after lighting. This illustrates in an excellent manner, therefore, the difference between heating a ground crop and an orchard. The latter is a comparatively easy and inexpensive operation in comparison with the first.

On May 28, after the severe frost of the previous night, the strawberry bloom both inside and outside the heated area was counted and notes taken on the percentage of bloom injured in both cases. The count showed that over 60 per cent of the bloom outside the heated area was ruined by frost, while only 30 per cent of the bloom inside the heated area was affected. In other words, the injury outside the heated area was twice as great as the injury inside.

From the foregoing evidence in conjunction with two previous seasons' results, there is no hesitation in recommending orchard heaters for the purpose of preventing frosts in orchards. There is, however, an element of chance in connection with ground crops, such as strawberries. In addition to the difficulty of holding the temperature on the ground to a point above freezing, there is also the disadvantage and danger of the heaters boiling over, in which case a number of plants are bound to be seriously damaged. Furthermore, if straw is present in the bed, injury from fire is liable to result when a pot boils over.

As orchard heaters, therefore, do not appear to be the most perfect means of protecting ground crops, a preliminary experiment with cheese cloth covers was conducted. It was found that by suspending cheese cloth at a foot above the ground, a difference of from 4 to 6 degrees in night temperature could be effected. The cheese cloth cover seemed sufficient to retain a large portion of the soil heat which would otherwise have radiated into the atmosphere. It was also found that if the cover was left on during the day, it did not prove so effective at night, due to the fact no doubt, that when the cover was off in the day time, it gave the soil a better opportunity to absorb the sun's heat, thus giving the soil more reserve heat to be held in check by the cover at night. These cheese cloth covers are used by cranberry growers, and it is intended to try them out on a large scale this coming year at Ottawa. From the present information, it appears to be the most practical means of protecting strawberries that has yet been devised.

TYPES OF HEATER.

Six different styles of heater were used and tested during the past season, and from these tests the following recommendations are made for those who contemplate the purchase of heaters:—

1. Select a heater of large capacity, not less than four gallons.
2. Select the style which has a good draft control. Proper control of draft is very important, for it allows the operator to increase or decrease the fuel consumption, as he desires, thus increasing or decreasing the amount of heat given off per hour.
3. Round heaters are preferable to square or longitudinal ones, as they do not warp so readily.

SELF-LIGHTING HEATER.

Among the different styles of heater was one which, it was claimed would light itself at any temperature for which it was set. So far, our experience with these heaters is not such that they can be recommended. This particular style had a cover with a sensitive diaphragm that contracted as the temperature fell, thus liberating an iron arm which scratched a match, the match in turn lighting a long wick. This wick was used to tie the cover to the heater and as soon as burned off would thus release the cover, which, being attached to the heater by a tight spring on the opposite side, would thus fly off. The wick with a cork float attached would then fall into the oil and ignite it. On several occasions these heaters worked all right, but two factors rendered them unreliable. The first of these was, if the heaters were left in the field over night ready for work, the condensation, due to the difference between night and day temperature, would render the match wet and useless, or that when the spring was released the match would not ignite. This can only be prevented by daily examination, which is not practicable. The other objection is that all heavy fuel oils require some gasoline to be put on the top of them at lighting time, and as the gasoline is put in the self-lighters at filling time, it may be evaporated before a frosty night occurs, thus, although the cover may fly off and the wick be lighted, the flame will be extinguished when it falls into the oil. These two objectionable features rendered the heaters unreliable, although on numerous occasions they worked all right. As yet, however, they cannot be recommended for general use.

A CHEAP FROST ALARM.

In previous reports, attention has been called to a frost alarm thermometer, costing about twenty or twenty-five dollars. This last year a much cheaper, but still reliable, alarm was tested. This new alarm costs not more than four dollars and consists of a metal diaphragm, which expands or contracts according to the changes in temperature. This may be so set as to ring a bell at any temperature by means of a small battery which is attached to the alarm. This alarm comes in two pieces, one piece being the sensitive diaphragm and the other the bell and battery box.

From our experience, this is quite reliable and on account of its low cost should form a part of every frost fighter's equipment.

SPRAYING.

EXPERIMENTS.

A large part of the orchard was devoted to a comparative test of several different spray mixtures as regards foliage injury only, it being impossible to report on scab control as there is practically no scab at present at Ottawa during most seasons.

The object of the test was to compare the relative values of Bordeaux mixture, lime sulphur and soluble sulphur. Plots Nos. 1, 2, and 3 were sprayed with soluble sulphur on May 7, June 4, June 24 and July 7, while plot No. 4 was sprayed on the last three dates only. The remaining plots were sprayed only once, viz., on July 12. To determine the effect of the different mixtures on the foliage, large quantities of leaves were gathered from the different plots and divided into slightly injured, badly injured and no injury groups. These were all counted and a result of this count is given in the attached plan. It may be added that the leaves were gathered by a person who only knew the location of the plots and their number, but did not know how each plot had been treated. In this way an unbiased estimate should result.

The conclusions from these results would indicate that soluble sulphur without the addition of arsenate of lead is non-injurious to the foliage or practically so, there being only 4½ per cent injury and that only slight. On the other hand, as soon as lead arsenate is added the results show a very serious burning, as will be seen by examining the record of plots Nos. 1 and No. 2, also plots Nos. 7, 11, 12 and 14. An examination of these plots will also show that either an increase of lead or an increase in the strength of the soluble sulphur will cause an increase in the burning. The burning in every case where soluble sulphur and arsenate of lead were combined was serious, and it is safe to say that these two preparations cannot be used together without the risk of obtaining serious results.

Comparing this with lime sulphur and lead arsenate, it will be seen that the burning in the case of lime sulphur was mostly slight and that even then the total injury was much less than in the case of the soluble sulphur-arsenate mixture. Bordeaux mixture gave the least injury of any of these mixtures, but possesses very slight advantage over lime sulphur in this respect. Of course, in different seasons the amount of injury from Bordeaux and lime sulphur varies as might perhaps the injury from soluble sulphur. The risk in the case of the first two mixtures, however, is light; in fact, the amount of injury here shown may be considered as the maximum, while in the case of soluble sulphur-arsenate the risk is beyond all question and should not be taken.

SOLUBLE SULPHUR.

Although soluble sulphur has been on the market for some few years, it has not as yet enjoyed the universal popularity, which perhaps such compounds will enjoy in the near future. It has many points in its favour, such as being easy to mix, easy to store and cheap to ship. The reason for the varied opinions and conflicting results that have been obtained is due no doubt to the addition of the arsenate of lead. The chemist tells us that soluble sulphur is largely sodium or potassium sulphide. This being so, it is quite evident that upon the addition of lead arsenate there would be a chemical reaction resulting in the formation of lead sulphate and consequently the formation of either sodium or potassium arsenate. The latter are soluble, and if soluble arsenate is present in any appreciable quantity serious foliage injury may be expected.

At the time of writing, experiments are under way in which arsenate of lime is being used instead of lead arsenate. It is expected that this combination will solve the difficulty and thus place these sulphide compounds within the reach of the average grower. From the chemists' point of view, the combination of soluble sulphur and arsenate of lime should not give injurious results, as there would not be any reaction whereby soluble arsenates could be formed. It is hoped that by the end of another season some definite data will be obtained on this question.

TEST of Soluble Sulphur, Bordeaux and Lime-Sulphur, Four Sprayings, May 7, June 4, June 24, and July 7.

How Treated.	Foliage injury.		Total injury.
	Slightly burned.	Badly burned.	
	%	%	%
1. Soluble Sulphur 1 to 30, arsenate of lead 1½ lb. to 40 gal. water.......	47	39½	86½
2. Soluble Sulphur 1 to 40, arsenate of lead 1½ lb. to 40 gal. water.......	47½	32	79½
3. Soluble Sulphur 1 to 40, no arsenate of lead..........................	4½	....	4½
4. Bordeaux, 4, 4, 40, 1½ arsenate of lead to 40 gal. water................	30	....	30 (May 7 spray omitted).

How Treated.	Single Sprayings for Foliage injury.		Total injury.
	Slightly burned.	Badly burned	
	%	%	%
5. Bordeaux, 4, 4, 40, arsenate of lead 1½ lb..........................	23½	....	23½
6. Bordeaux, 4, 4, 40, arsenate of lead 2 lb...........................	24·2	7½	31·7
7. Soluble Sulphur 1 to 30, arsenate of lead 1½ lb. to 40 gal. water......	39	29·7	68·7
8. Lime Sulphur 1 to 30, arsenate of lead 1½ lb. to 40 gal water..........	31·2	8·5	39·7
9. Lime Sulphur 1 to 40, arsenate of lead 1½ lb. to 40 gal. water...	38·25	12·25	50·5
10. Lime Sulphur 1 to 40, arsenate lead of 2 lb. to 40 gal. water.........	27	1½	28½
11. Soluble Sulphur 1 to 40, arsenate of lead 1½ lb. to 40 gal. water......	49	12·75	61·75
12. Soluble Sulphur 1 to 40, arsenate of lead 2 lb. to 40 gal. water.......	52·75	27·5	80·25
13. Lime Sulphur 1 to 40, no arsenate of lead..............................	31·5	2·75	34·25
14. Soluble Sulphur 1 to 30, arsenate of lead 2 lb. to 40 gal. water	42·5	47·5	90

OTTAWA.

VEGETABLE GARDENING.

(M. B. Davis, B.S.A., *Assistant in Temporary Charge.*)

The past season has witnessed considerable expansion in the work of vegetable gardening. Probably the greatest acquisition to the work has been the installation of the Skinner system of irrigation, which is reported on in full in these pages. The installation of this plant places the area devoted to vegetables on an up-to-date basis and will enable a considerable increase in the experimental work, thus greatly enhancing its value.

Another development of the past season is the extension of cultural experimental work, which is gradually replacing a large part of the variety testing as sufficient average results of the latter are obtained. By substituting this work for a certain amount of variety work, it is hoped that some valuable points may be worked out before the introduction of numerous new varieties will necessitate the return of much land to variety testing again.

A start was made this year in the production of vegetable seed, and although this work is but in its infancy at this Farm and was consequently conducted on a very small scale, it is expected to increase the area devoted to this work in the very near future.

On the whole, the past season may be termed a very favourable one for vegetable gardeners. With an early spring, allowing of quick planting operations and a wet summer, the market gardener was placed in a very favourable situation. Celery and roots were exceptionally good crops, owing to excellent moisture conditions. Potatoes, on the other hand, were a practical failure for the average grower, although the man who sprayed thoroughly obtained exceedingly good yields. Owing to the wet fall, such crops as dry peas and beans suffered heavily, consequently a large proportion of poor seed of these two crops may be anticipated for the season of 1916.

In the following pages, a brief report is given of the main features of the work. As variety tests of most kinds of vegetables have been reported on from time to time, much of this has been omitted in this report.

POTATOES.

VARIETY TESTS, 1915.

The following table gives a list of the varieties tested at the Central Experimental Farm the past season, together with the rate of yield per acre of both marketable and unmarketable potatoes:—

No.	Variety.	Marketable.		Unmarketable.	
		bush.	lb.	bush.	lb.
1	Table Talk	423	30	57	12
2	Dalmeny Hero	331	6	47	30
3	New Chieftain	289	48	57	12
4	Dalmeny Regent	289	18	48	..
5	Dobbie Prolific	281	36	57	12
6	Superlative	268	24	70	24
7	Table Talk	235	24	81	24
8	Warrior (Davies)	235	24	81	24
9	Brydon	204	36	83	36
10	Aroostook Wonder	202	24	69	18
11	Factor	202	24	42	54
12	Scottish Triumph	171	36	70	24
13	The Scott	169	24	70	24
14	Up to Date	167	12	46	12
15	Brydon Beauty	162	48	71	30
16	Dreer Standard	140	48	31	54
17	Acquisition	138	36	77	..
18	Dooley	136	24	77	..
19	Sir Walter Raleigh	134	12	64	54
20	Wee McGregor	127	36	44	..
21	Clyde	114	24	28	36
22	Royalty	110	..	136	24
23	Carman No. 1	107	48	44	
24	American Wonder	107	48	37	24
25	Nebraska	107	48	33	..
26	Russet Queen	96	48	63	48
27	Early Market	90	12	19	48
28	Late Puritan	90	12	41	36
29	Todd Wonder	85	48	25	18
30	Eureka Extra Early	83	36	92	24
31	New Queen	77	..	63	48
32	Jeannie Dean	75	54	36	18
33	Irish Cobbler	70	24	66	
34	Snow	70	24	26	24
35	Green Mountain	69	18	20	54
36	Empire State	61	36	97	
37	Green Mountain Jr	57	12	18	42
38	Vermont Gold Coin	52	48	20	54
39	Early Norther	51	42	47	18
40	Bovee	50	36	48	24
41	Reeves Rose	44	..	55	..
42	New Scotch Rose	42	54	38	30
43	Houlton Rose	41	48	48	..
44	Pan American	40	42	30	48
45	New Keystone	37	30	14	18
46	Rawlings Kidney (Ashleaf Kidney)	36	18	41	48
47	Early Hebron	36	18	46	12
48	Early Rose	30	48	24	12
49	Manistee	29	42	50	36
50	Burpee Extra Early	29	42	42	54
51	Early Ohio	25	18	26	24
52	Early Six weeks	24	12	20	54
53	Money Maker	23	6	55	..
54	White City	22	..	24	12
55	Improved Early Ohio	22	..	44	..

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In addition to the test for 1915, a four-year average of a number of varieties is available and is here published:—

No.	Variety.	Marketable.			Unmarketable.		
		bush.	lb.	oz.	bush.	lb.	oz.
1	Dalmeny Hero	328	4	8	91	4	8
2	Dobbie Prolific	304	42	–	51	42	–
3	Table Talk	303	4	8	66	. .	–
4	Dalmeny Regent	301	7	8	80	12	–
5	Brydon	294	48	–	64	21	–
6	Warrior (Davies)	271	9	–	53	54	–
7	Clyde	256	18	–	40	42	–
8	Scottish Triumph	255	45	–	77	—	–
9	Superlative	255	12	–	52	48	–
10	Brydon Beauty	253	33	–	58	1	8
11	Sir Walter Raleigh	250	15	–	36	34	8
12	New Chieftain	246	48	–	44	—	–
13	Up to Date	244	45	–	63	15	–
14	Green Mountain Jr	236	30	–	46	28	8
15	Todd Wonder	235	57	–	31	4	8
16	Houlton Rose	234	51	–	54	43	8
17	The Scott	233	45	–	65	27	–
18	Wee McGregor	233	28	8	113	18	–
19	Acquisition	228	15	–	70	24	–
20	Eureka Extra Early	227	42	–	82	27	8
21	Reeves Rose	226	3	–	65	27	–
22	Snow	224	24	–	42	21	–
23	Manistee	224	7	8	53	54	–
24	New Queen	223	18	–	66	33	–
25	Burpee Extra Early	215	52	8	46	12	–
26	Royalty	211	12	–	111	6	–
27	Nebraska	209	33	–	36	15	8
28	Early Norther	206	31	8	48	7	8
29	American Wonder	205	9	–	48	24	–
30	Green Mountain	203	46	8	65	40	8
31	Late Puritain	197	35	4	54	2	4
32	New Scotch Rose	196	37	8	48	7	8
33	Irish Cobbler	195	15	–	53	57	–
34	Jeannie Dean	194	58	8	63	31	8
35	Vermont Gold Coin	190	51	–	53	54	–
36	Early Market	187	33	–	31	21	–
37	Dreer Standard	186	24	–	22	55	8
38	Pan American	184	31	8	56	6	–
39	Rawlings Kidney (Ashleaf Kidney)	180	42	–	50	19	8
40	Russet Queen	178	45	–	79	45	–
41	Factor	177	6	–	40	43	8
42	Early Rose	147	57	–	45	39	–
43	Money Maker	143	—	–	50	—	–
44	Early Ohio	142	10	8	41	15	–
45	New Keystone	124	52	8	27	13	8
46	Improved Early Ohio	121	—	–	80	51	–

The attention of farmers and vegetable growers, in the vicinity of Ottawa, is called to these two tables. It will be noted that the commoner varieties, such as Green Mountain, Gold Coin and Dreer Standard are not in the lead, either in the four-year average or the one year list. In both tables the leading or heaviest yielding varieties correspond fairly well, indicating quite clearly that for this district these varieties are the most adaptable. That is, when the seed is grown from year to year in this district, these varieties appear to be the ones which can maintain their relative productiveness, while other varieties gradually grow less productive. This would indicate that certain varieties are better suited to certain localities, and, that because a variety does well in New Brunswick, it does not necessarily indicate that the same variety will do well at Ottawa, even if the same strain is planted in both places.

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Market gardeners and farmers of the Ottawa Valley would do well, therefore, to investigate the value of these few leading varieties, viz.: Table Talk, Dalmeny Hero, Dalmeny Regent, (Davies) Warrior, etc. Of course when annual importations of seed stock are made from natural potato districts, the importance of this selection of varieties to suit local conditions is not so apparent. This point will be further discussed in the following paragraphs.

VALUE OF IMPORTED SEED FOR THE OTTAWA VALLEY AND SIMILAR DISTRICTS.

For the past number of years it has been noted that potatoes grown from tubers produced at Ottawa have given smaller yields than imported seed of the same variety and strain. Not only has this been the case at the Experimental Farm, but it is also common among many of the vegetable growers and farmers of this district, although in some apparently favoured locations, there appears to be little, if any, advantage gained from the importation of seed. The reason for this apparent inability of the Ottawa district to produce seed potatoes of good vitality is not known, but a theory, which is the best to hand, is that it is a question of the over maturity of the tubers. In other words, it is considered that, on account of the potato tops drying up and withering relatively early in the season, as is generally the case at Ottawa, the tubers when dug, are fully matured and, although excellent for table use, are too mature and consequently have too little vitality for seed purposes.

Experiments are now under way to prove either the fallacy or the truth of this theory.

To give a clearer idea of the value of good seed, as compared with seed of poor vitality, an experiment was conducted at Ottawa this past season, with home-grown seed versus seed from the Experimental Station at Fredericton, N.B. Both lots of seed were originally from the same source, in fact the Fredericton seed came from Ottawa in 1913. Five varieties of potatoes were used, and the Ottawa seed of each variety was planted side by side with the Fredericton seed of the same variety. Both were planted in uniform land and treated in the same manner. The following table gives the results of this experiment:—

Variety.	Ottawa Seed.					Fredericton Seed.				
	Plants appeared above ground.	Marketable.		Unmarketable.		Plants appeared above ground.	Marketable.		Unmarketable.	
		bush.	lb.	bush.	lb.		bush.	lb.	bush.	lb.
Bovee	18–VI	50	36	48	24	17–VI	92	24	61	36
Gold Coin	24–VI	39	36	17	36	17–VI	156	12	110	..
Irish Cobbler	21–VI	59	24	46	12	17–VI	211	12	103	24
Green Mountain	24–VI	79	12	44	..	17–VI	220	..	118	..
Carman No. 1	19–VI	..	..	22	..	19–VI	248	36	110	..

In every case the Fredericton seed gave larger yields than the Ottawa seed, and the differences were in all cases very marked, leaving little doubt as to the greater vitality of the imported seed. It will also be noted that, in all cases but one, the growth of the imported seed was quicker than that of the Ottawa seed. Until a way has been devised, whereby the potato growers of the Ottawa Valley and similar districts can grow seed of good vitality, it will mean a great many dollars in the pocket of the average farmer to import annually his seed potatoes from some well known potato district. It would pay farmers and growers of a community to co-operate in the purchase of seed potatoes, thus enabling them to obtain a low price and also a good quality of stock. Some years are much more favourable for the production of good seed than others, and in favourable years home grown seed gives very good results.

DIFFERENT DATES OF PLANTING TUBERS FOR SEED PURPOSES.

For a number of years it has been claimed that immature potatoes gave better results for seed purposes than tubers fully matured. In order to gain some definite information on this point, and also in order to devise a way whereby good seed potatoes could be produced at home, tubers were planted in 1914, at different dates, and the tubers from these different plantings sown in separate plots on the same date in 1915. Two varieties were used in this test, viz.: Empire State and Early Sunrise. The following table gives the results of the test:—

Variety.	Yield from tubers planted 10–VI–14.				Yield of plot from tubers planted 22–VI–14.				Yield of plot from tubers planted 3–VII–14.			
	Marketable.		Unmarketable.		Marketable.		Unmarketable.		Marketable.		Unmarketable.	
	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
Empire State	79	12	68	12	132	0	59	24	105	36	48	24
Early Sunrise	44	0	25	18	77	0	41	48	50	36	31	54

It will be noticed that, with both varieties, the seed from the earliest planting in 1914 gave the lowest yield in 1915, while the seed from the planting of June 22 in 1914 gave the largest yield in 1915. The planting of July 3 in 1914 produced seed which gave only moderately good results in 1915. This would appear to bear out the idea of immature seed and would also indicate that seed might be too immature. As further experiments are being conducted along this line, more data should be forthcoming in a short time.

SPROUTING OF SEED POTATOES.

An interesting experiment to show the value of sprouting seed potatoes, a method much employed in Great Britain and Ireland, was conducted this past season. The tubers were sprouted where there was light, thus they produced a short, stocky, green sprout, rather than a long, slender, white one, which would have been the result of sprouting in darkness. To sprout large quantities, the tubers are merely piled on the floor in a light, warm room, having the pile about two to three tubers deep. If left in this manner for some days, they will soon produce strong sprouts, which will not break off when the tuber is handled.

At planting time these tubers are then cut into large pieces and planted in the usual manner. A little care is necessary in handling the sprouted tubers, but the extra cost of handling is very slight. Sprouted sets should be hauled to the field in boxes, not in bags.

The results from the sprouted seed, as compared with unsprouted seed planted the same date, show that earliness is greatly increased by sprouting. The following table gives the results of the test from one row, 66 feet in length. Diggings were made on July 29, August 5, August 12 and August 26:—

Variety.	Sprouted Seed yield at different dates.								Non-Sprouted Seed yield at different dates.							
	July 29.		Aug. 5.		Aug. 12.		Aug. 26.		July 29.		Aug. 5.		Aug. 12.		Aug. 26.	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Boveē	4	8	7		10		4	8		8	2		6		4	8
Early Rose	3	12	9		18	8	22			7	4		7	4	11	
Burpee Extra Early		4	3	14	2		3	8		0		5	0		1	8
Irish Cobbler	3	5	3	14	4	8	4	12		10	2	14	4	4	4	8
Early Ohio	1	8	7		10	12	12	8		13	2	2	6	4	8	8

An examination of this table will show that in every instance the sprouted seed gave much larger yields in the early diggings, than did the non-sprouted seed, thus showing that earliness can be greatly increased by sprouting the tubers before planting. It is believed that by sprouting main crop potatoes, the total yield of such varieties can also be greatly increased and experiments to ascertain this are now under way.

TOMATOES.

As new varieties and new strains of older varieties are continually coming on the market, it is essential that the variety testing of this crop be continued from year to year. Following will be found a table giving the list of varieties tested during 1915 and this is followed by a table giving a three year average of those varieties which have been tested for that length of time. As earliness in tomatoes is an essential point, the first table given is arranged in order of earliness, while the second table is arranged in order of total yield. Earliness is not based merely on the date of the first fruit, but is based on the yield of marketable ripe fruit for the first two weeks of the tomato season, this period being dated from the day that the first ripe fruit was picked from the plantation as a whole, and not dated from the first picking of the variety in question. Such a plan gives a clearer and more correct idea of earliness than if the plan of the appearance of the first ripe fruit was adopted. This is because of the fact that many of the varieties may show an odd ripe fruit very early, but will not continue to produce ripe fruit in any quantity.

Two new varieties tested at this Farm for the first time this year, are worthy of mention. One is Luther Burbank's new variety called Burbank Early, which, although not quite so early as one or two other varieties, is promising, both on account of earliness and also smoothness. Earliana, which for years has been one of the leading early varieties, has the great disadvantage of being very rough, so that when a smooth variety, almost as early, is found, it is worth recognition. Such a variety is Burbank Early.

The other variety mentioned above is John Baer. This variety has not proved nearly as early as it is claimed to be, but still can be classed as an early tomato, of good quality, and smooth, as grown by this Farm this year. However, it is not to be classed with Earliana, Earlibell or Burbank Early, for an early tomato.

Two other varieties which have been on the market for some time are worth mentioning, in fact, should be grown much more largely than at present. Earlibell, one of these varieties, has proved, in tests here, for the past three years, an exceptionally early variety and also one of the smoothest and handsomest of tomatoes. It seems to be a variety that has been somewhat overlooked by many growers of early tomatoes. Bonny Best, the other variety, is an excellent mid-early variety, and it is surprising that it is so little grown by market gardeners. Its great feature is its smoothness, shape, colour and quality, rendering it one of the most marketable and profitable of tomatoes, lacking only in earliness. It is a fairly heavy yielder and should prove a good canning tomato.

Results of variety test in tomatoes, 1915. Best early varieties, based on yield of first two weeks of season. Five plants used for each variety:—

Variety.	Number days from sowing to first ripe fruit.	Yield of marketable fruit first two weeks.	Total yield marketable fruit.	Total yield unmarketable fruit.
		lb. oz.	lb. oz.	lb. oz.
Sparks Earliana	117	9–15	120–5	26–7
Earlibell	112	8–10	103–4	24–11
Alacrity	117	7–14	120–7	34–5
Burbank Early	118	7–7	95–3	45–15
Sunnybrook strain Earliana	119	6–15	122	28
Early June	121	6–2	98–9	25–9
John Baer	119	5–4	93–9	62–12
Northern Adirondack	117	5–4	107–2	63–1

Variety test of tomatoes 1915, arranged in order of total yield only. Five plants of each variety used in test:—

Variety.	Number of days.	Yield ripe fruit first two weeks.	Total yield marketable ripe fruit.	Total yield unmarketable and green fruit.
		lb.–oz.	lb.–oz.	lb.–oz.
Earliana (Langdon)	119	6–14	154–4	22–6
I. X. L. Prolific	117	4–6	130–3	52–10
Earliana Scarlet	119	3–15	112–9	20–4
Sunnybrook Earliana	119	6–15	122–9	28
Alacrity	117	7–14	120–7	34–5
Earliest of All	116	2–7	116–14	40–11
Prosperity	122	9	110–8	30–7
Bonny Best	119	4–9	108–15	36–3
Improved Earliana (Green)	119	2–13	107–12	42–12
Northern Adirondack	117	5–4	107–2	63–1
Earlibell	112	8–10	103–4	24–11
Chalk Early Jewel	119	1–6	100–5	75–11
Dobbie Earliest	117	2–9	98–13	29–13
Early June	121	6–2	98–9	25–9
Danish Export	114	2–14	98–5	59–5
Burbank Early	118	7–7	95–3	45–15
Round Scarlet Skin XXX	117	3–7	93–14	42–11
John Baer	119	5–4	93–9	62–12
Sparkling Dewdrop	116	2–2	89–15	54–4
First and Best	122	14	87–11	68–5
Crimson Cushion	119	3–9	86–4	32–12
Extra Early Wealthy	119	4–14	82–7	31–1
Dominion Day	119	3	78–7	76–11
Jack Rose	117	1–1	67–10	44–5
Blue Stem (King Edward)	119	4	65–10	126–8
Livingston Globe	122	9	59–6	88–8
Golden Ponderosa	122	5	40–9	60–12

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TOMATOES—THREE YEAR AVERAGES.

Following are lists of tomatoes giving a three-year average of results. The first list is arranged in order of earliness based on the first two weeks' production, while the second list is arranged in order of total yield.

TOMATOES—Three-Year Average—First Two Weeks' Yield, 1913-14-15.

Variety.	Marketable.	Unmarketable.
	lb.–oz.	lb.–oz.
Alacrity	9–	.....
Sparks Earliana	8–9	.....
Extra Early Wealthy	7–14	–1
Field Early June	7–11	–2
I. X. L.	7–8	—
XXX Earliest Round Scarlet Skin	7–7	–5
Northern Adirondack No. 1	6–9	–4
Earlibell	6–8	–6
Crimson Cushion	5–5	–2
Earliana Sunnybrook Strain	5–5	–2
Earliest of All	5–3	–4
Earliana, Northern Grown	4–13	–10
Jack Rose	3–11	– –
Bonny Best	3–6	.....
Dobbie Earliest	3–	.....
Dominion Day	3–	–1
Chalk Early Jewel	2–8	.....
First and Best	2–	–1
Prosperity	1–15	–2
Livingston Globe	1–2	–1
Blue Stem (King Edward)	1–	–1

TOMATOES—Three-Year Average, 1913-15. Arranged in order of Total Yield.

Variety.	Number days from sowing to first ripe fruit.	Yield first two weeks.		Total yield.	
		Marketable	Unmarketable.	Marketable	Unmarketable.
		lb.–oz.	lb.–oz.	lb.–oz.	lb.–oz.
Sparks Earliana	123	8–9	....	77–11	30–10
Alacrity	123	9–	....	75–4	35–6
Earliana Sunnybrook Strain	125	5–5	1–2	75–1	23–6
Earliana Northern Grown	124	4–13	–10	73–	29–
I. X. L	122	7–8	....	72–14	33–4
Selected Earliana	123	3–11	....	72–13	24–5
XXX Earliest Round Scarlet Skin	124	7–7	–5	67–3	18–13
Sparks Earliana Selected	125	6–14	–2	64–12	33–14
Field Early June	124	7–11	–2	63–9	19–15
Earliest of All	123	5–3	–4	63–	30–4
Prosperity	126	1–15	–2	61–14	27–5
Northern Adirondack No. 1	125	6–9	–4	61–5	37–15
Earliana	130	7–3	–1	61–4	20–9
Extra Early Wealthy	124	7–14	–1	58–3	32–1
Bonny Best	123	3–6	....	57–14	28–15
Earliana	133	3–6	–1	58–14	30–8
Crimson Cushion	129	5–5	–2	57–9	28–
Earlibell	121	6–8	–6	56–9	33–7
Improved Earliana (Green)	128	2–10	....	55–4	36–2
Johnson Jack Rose	129	3–11	....	51–13	46–14
Earlibell	120	4–2	....	52–13	35–8
Chalk Early Jewel	125	2–4	–7	58–2	48–5
Dobbie Earliest	123	3–	....	48–14	35–7
First and Best	132	2–	–1	48–2	52–13
Chalk Early Jewel	128	2–8	....	47–15	42–8
Dominion Day	131	3–	–1	43–6	45–13
Chalk Early Jewel	124	1–11	–1	40–5	42–2
Blue Stem (King Edward)	128	1–	–1	36–2	61–9
Livingston Globe	130	1–2	–1	33–14	44–2
Chalk Early Jewel	129	1–6	....	33–	51–8

PRUNING AND STAKING TOMATOES.

Last year mention was made of the results obtained from pruning tomatoes to a single stem and tying to stakes. It was pointed out that by following this practice, fruit was obtained earlier, and also that there was a better quality of fruit. Experiments this year prove the same to be true again.

In the 1915 experiments, two varieties of tomatoes 25 plants of each were used, viz.: Bonny Best and Earliana. The methods of training were as follows:—

1. Plants four feet apart each way, lying on the ground, not pruned.
2. Plants in rows four feet apart, with plants two feet apart in rows, trained to a single stem and tied to a stake.
3. Plants 2 x 4 feet apart, trained to a single stem and tied to a stake with one-half the foliage removed.
4. Plants 2 x 4 feet apart, trained to a single stem and tied to strands of wire carried on posts.

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5. Plants 2 x 4 feet apart, trained to two stems and tied to a stake
The results from these different methods of training follow:—

Training Experiments with Bonny Best.

How trained.	Yield of ripe fruit first two weeks, per 100 sq. ft.				Total Yield ripe fruit per 100 sq. ft.			
	Marketable.		Unmarketable.		Marketable.		Unmarketable.	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
2 by 4 feet, tied to stake 1 stem, one-half foliage removed	8	12	..	..	105	4	4	15
2 by 4 feet, 1 stem, tied to wire	4	15	..	..	111	11	6	9
2 by 4 feet, 1 stem, tied to stake	2	8	..	..	130	15	8	9
2 by 4 feet, 2 stems, tied to stake	1	6	..	..	197	2	7	14
4 by 4 feet, on ground	..	8	..	..	99	9	41	4

Earliana, Sunnybrook Strain.

How trained.	Yield of ripe fruit first two weeks, per 100 sq. ft.				Total Yield ripe fruit per 100 sq. ft.			
	Marketable.		Unmarketable.		Marketable.		Unmarketable.	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
2 by 4 feet apart, tied to stake, 1 stem, ½ foliage removed	5	8	..	..	96	9	2	4
2 by 4 feet, apart, 1 stem, tied to stake	4	4	..	..	87	10	2	1
2 by 4 feet, apart, 1 stem, tied to wire	2	13	..	..	97	7	1	7
4 feet apart each way, on ground	1	13	..	..	95	12	23	12
2 by 4 feet, apart, 2 stems, tied to stake	..	7	..	..	122	14	11	..

It will be noticed that in both cases the vines pruned to one stem, tied to a stake, with one half the foliage removed, gave the greatest amount of early fruit. On the other hand, the vines trained to two stems, in both cases, gave the greatest total yield of fruit.

The expense of staking and tying is not nearly as great as a grower would at first think, and for a person growing early fruit for market, is offset by the increased yield of early fruit. In addition, the fruit from the staked vines was better shaped, and could be classed as a higher grade. Another feature is the increased number of plants that can be grown per 100 square feet, thus increasing the yield per square foot by this close planting.

As numerous inquiries are received by this Department, asking about pruning tomatoes to a single stem, the following illustration will be of use to the uninitiated.

GREEN PEAS.

A comparison of the relative advantages of a succession of varieties of different seasons with the same variety planted at intervals of a week apart for four weeks.

Four varieties of peas were used in the above experiment, viz.: Gradus, McLean Advancer, Stratagem and Thos. Laxton. One hundred feet of each of the four varieties was planted on the eighth day of May. Following this planting were three plantings of Thos. Laxton made on the 15th, 22nd, and 29th of May. The object of this experiment was to see whether or not the three varieties of different seasons, if all planted the same date, would give as good a continuation of green peas as the Thos. Laxton if it were planted at intervals of a week apart for the four weeks.

From the results obtained, both Gradus and Thos. Laxton planted on the 8th of May, gave green peas on the 8th of July. The Gradus gave green peas from the 8th to 22nd of July; McLean Advancer from the 16th to the 19th of July, Stratagem from the 23rd of July to the 2nd of August. Therefore, for these three varieties of peas, all planted the same day, the season commenced the 8th of July and continued until the 2nd of August, with pickings on the 8th, 14th, 16th, 22nd, 23rd, 26th, 29th, 30th of July and 2nd of August, making nine pickings in all, covering a period of twenty-five days.

As before stated, the Thos. Laxton, planted on the 8th of May, gave its first picking on the 8th of July and continued pickings until 24th of July. Thos. Laxton planted May 15 was in season from July 15 to July 24. Thos. Laxton planted May 22 yielded from July 15 to July 26, and Thos. Laxton planted May 29 yielded from July 20 to July 28, making a season for these four plantings at different dates from July 8 to July 28, or in other words, a season covering a period of twenty days, with nine pickings, viz.: July 8, 15, 16, 20, 21, 23, 24, 26 and 28.

Comparing the results from the two different lots, it appears that both gave the same number of pickings, but that the three varieties of different seasons gave a longer season by five days than did the four plantings of Thos. Laxton. Another interesting point brought out was that the earliest planting of Thos. Laxton gave the largest yield of the four plantings, the second planting the second largest yield, the third planting the third largest yield and the last planting the smallest yield. From all this it would appear, therefore, that to obtain a succession of green peas, with the maximum yield and the least trouble, it is better to plant three or more varieties of different seasons at the same time than to make a continuous number of plantings extended over a long period.

GREEN BEANS.

A comparison of the relative advantages of a succession of varieties of different seasons with the same variety planted at intervals of a week apart for four weeks.

This experiment is very similar to the one referred to under green peas, the object of the experiment being to decide whether or not the same variety should be planted at intervals to obtain a succession of crop, or whether a number of varieties of different seasons would give this result in a more satisfactory manner. In the case of green peas, the result of the experiment showed that a number of varieties of different seasons, planted on the same day, gave a longer succession of crop than the one variety planted at intervals. In this experiment the results are very similar. Four varieties of beans were used, viz.: Stringless Green Pod, Extra Early Red Valentine, Refugee or 1,000 to 1 and Round Pod Kidney, the Round Pod Kidney being the one planted at intervals of a week apart for four plantings. The first three varieties were planted on May 25, as was also the first planting of Round Pod Kidney. Subsequent plantings of Round Pod Kidney were made on June 1, June 8 and June 15. The first green beans were picked from Stringless Green Pod on the 19th of July.. The three varieties of different seasons gave pickings from July 19 to August 31, a season of forty-three days. The four plantings of Round Pod Kidney gave the first picking on July 28 and continued in season until the 3rd of September, a season of thirty-five days. This shows a longer season in favour of the three varieties, their season being longer by eight days. In matter of yield, the Round Pod Kidney, during its early plantings, gave the largest yields, but the later plantings fell off very materially in this respect. This experiment goes to show, therefore, that for a continuous crop of string beans, it is far better to plant three or four varieties of different seasons on the same date, than to rely on successive plantings of a single variety.

VEGETABLE WORK UNDER GLASS.

Since the erection and occupation of the new greenhouses, the Horticultural Division has devoted considerable time to the growing of some of the more important greenhouse crops, with a view of ascertaining the kinds and varieties most suitable for greenhouse culture, and also to ascertain, if possible, which crops are the most lucrative for a greenhouse grower.

Around Ottawa it seems that the owners of greenhouses devote the most of their time to growing lettuce, which, although an easy crop to handle and a moderately profitable crop at times, is by no means the only greenhouse crop they could handle at a profit, in fact to grow a greater variety of crops would in most cases bring greater returns. The reason that can be suggested for this lack of initiative on the part of the growers is that there seems to be an idea abroad that such crops as tomatoes and melons cannot be grown at a profit during the off season of the year, and thus the growers seem loath to depart from the old fixed ways. In the following paragraphs a report on the results of growing tomatoes will be found. More work has been done with tomatoes than with any other crop, it having been found to be one of the most profitable crops for greenhouse work. For the benefit of any person contemplating the growing of this crop under glass, a short article on the growing of the same is attached.

EXPERIMENTS WITH TOMATOES UNDER GLASS.

GROWING TOMATOES IN POTS VERSUS GROWING IN BENCH AND SOLID BEDS.

An experiment to determine the relative value of the pot culture of tomatoes in the greenhouse as compared with either bench or solid bed culture was conducted this past season. The pot culture method has long been recognized as having one advantage over the bed method. The advantage of the pot culture is that after the crop has passed its prime the plants may be removed to another house or may be packed more closely in the same house to ripen any green fruit that may remain on the topmost trusses. This would allow of the use of the vacated space much earlier than would be the case if the plants were directly planted in the bed or bench, for in the latter case it would be necessary to permit the plants to occupy the entire house until practically the whole crop was ripened. Of course greater expense is coupled with the pot culture method, and, as will be seen from the following results, a lessened crop is also the result. The conclusion arrived at, therefore, is, that to obtain a maximum crop of tomatoes, the bed and bench method is superior to the pot method, but that a moderately good crop of fruit can be obtained by the latter method, and that it may be advisable, when pushed for room, to resort to this method of growing tomatoes in the greenhouse.

How and where Grown.	Yield of 108 square feet in each case.		
	Lb.	Oz.	
Planted in solid bed..	161	1·5	
Planted in side bench..	118	5	279 lbs. 6½ oz. for planted method.
Pot culture in solid bed..	74	8·5	
Pot culture in side bench..	127	8	202 lbs. ½ oz. for pot culture method.

GROWING TOMATOES UNDER GLASS.

There are few crops that can be grown at greater profit, by the greenhouse man, than tomatoes. This crop will readily respond to careful and proper treatment, and, although a trifle difficult to handle at times, it can readily be handled by the average grower. For the greenhouse trade a smooth, medium sized, firm, meaty tomato is desired. In this country the consumer is still demanding a tomato slightly larger than most of the English forcing varieties. On this account many of the most prolific and smoothest tomatoes are not grown by Canadian growers. From the experience of this Farm, taking everything into consideration, Bonny Best and Livingston Globe are two of the best varieties for forcing purposes.

With good care a grower of greenhouse tomatoes may expect a crop ranging from two to two and one-half pounds per square foot. As tomatoes out of season have averaged, at least, 20 cents a pound for the past two years, this means a return of 40 to 50 cents per square foot of bench space. A crop of tomatoes, planted during the latter part of summer, will give fruit for the Christmas and holiday market. The crop at this season of the year generally occupies the house for about fifteen weeks, so that 40 to 50 cents per square foot for a fifteen or sixteen-week period would be considered a profitable return.

The seed is sown in flats and the young plants pricked off into pots as soon as they are large enough to handle. They should not be left in the seed flat for too long a period, otherwise they will become too leggy and soft. To have first-class results, stocky, strong plants must be grown from the start. The young plants are generally left in the second flats for about a month, after which they should be potted in four-inch pots and held there for about two or three weeks. The length of time the plants are held in any one stage depends very largely upon the weather conditions. During dark, muggy weather, the young plants are liable to get soft and leggy, so will necessarily have to be held back a little longer until they become more stocky in growth. From the four-inch pots they are transplanted directly to the beds or benches, being planted in rows two feet apart, with the plants eighteen inches apart in the rows.

The soil for tomato culture should not be made too rich in nitrogenous materials. If too large a supply of nitrogen is present, soft and too rapid growth will result. A moderately light, loamy soil is best suited for this crop and should be mixed with about one-fourth the amount of well rotted manure, to which is added a small quantity of either bone meal or acid phosphate. About one part of bone meal or phosphate to one hundred parts of soil is sufficient.

Whether or not feeding will be necessary will depend very largely upon the condition of the plants. In some cases feeding will be necessary, but in this respect care must be exercised. Liberal feeding with liquid manure is not recommended, as it produces too soft a growth. If feeding is found necessary, use bone meal or acid phosphate with a moderate quantity of potash or wood ashes. Feedings should be light and frequent, rather than heavy and seldom. If plants are being grown on raised benches with only a few inches of soil, feeding will need to be far more frequent than if the plants are in a solid bed.

Although a tomato crop will require considerable water, the watering must not be too frequent. Too frequent watering, which tends to keep the house damp, induces disease and soft growth. The top inch or two of soil may be allowed to appear dry, so long as the roots are in moist condition. The watering of tomatoes is done at long intervals, a good heavy watering being given each time, after which the plants are let go until they really are in need of another watering.

The best method of training in the greenhouse is to train to a single stem. Tomatoes grown to a single stem have proved greater yielders per square foot than plants grown to two or three stems. All laterals, therefore, are pinched off as soon as they appear, and the single stem tied to wires or bamboos, themselves tied or supported by parallel wires running over the bed at a height of five feet.

One of the most important operations in connection with tomato culture is the maintenance of a proper temperature and proper ventilation. Few crops are quite so exacting in their demands along these lines as the tomato. A night temperature of 58 to 62 degrees F., accompanied by a day temperature of 70 degrees to over 80 degrees when the sun is up, is about correct. This temperature, though, must be accompanied by purity of air, for in a hot, moist or close atmosphere, tomatoes prove a failure. They desire warm, dry, bracing air, and, during the dark days of early winter and late fall, the question of proper ventilation is all important. Especially after the plants are in blossom is it necessary to have the air dry, otherwise pollination is a difficult task. To aid the setting of fruit as much as possible, hand pollination in some form should be resorted to. For this purpose a small downy feather or rabbit's tail, tied to the end of a light stick, is used. By simply touching each open flower with this apparatus much pollen is released and applied to the pistil. During the early winter or late autumn it is exceedingly difficult to get a good set of fruit without the adoption of hand pollination. Many growers merely tap the wires or stakes to which the plants are tied, but, during dark weather especially, this is not sufficient.

As fungous diseases of the tomato crop are quite easily prevented by proper ventilation and a dry atmosphere, little trouble should be experienced in that connection, if proper attention is given to those points. If, however, an attack of mildew gets a hold on the plants, it should be checked at once by spraying with any of the ordinary fungicides. Bordeaux mixture is excellent for this purpose, but should be used rather weaker than for other crops, a 3, 4, 40 mixture, when well made, is quite safe. This is made by using 3 pounds of copper sulphate, 4 pounds of lime and 40 gallons of water.

For the control of white fly, which will often be found on a crop, fumigating with hydrocyanic acid gas is resorted to. For this purpose use half an ounce potassium cyanide (98 per cent pure), 2 ounces sulphuric acid, and 4 ounces of water to 4,000 cubic feet of space. The acid and water are placed in a saucer and the cyanide dropped in, after which a speedy exit should be made by the operator, for the gas is a deadly poison. The foregoing formula has been found sufficiently strong for the new greenhouses at this Station, but where a more open type of house is used, such as the King Construction house, it might be found necessary to use as much as 1 ounce of cyanide to 4,000 cubic feet. If used in too concentrated a form, serious burning will result, so each grower should be on the safe side at first until he has ascertained the correct proportions for his house.

CAULIFLOWERS UNDER GLASS.

Two trial lots of this vegetable have been grown in the greenhouses in order to determine whether or not this crop could be considered profitable for the average grower. In both cases, the results obtained showed that, although a large number of good heads could be obtained, it cannot be considered a profitable crop for the average man. The returns per square foot of space used are considerably lower than the returns from a crop of tomatoes.

For any person desiring to grow cauliflowers it may be added, it has been found that Extra Early Snowball and Dwarf Erfurt are two of the best varieties for greenhouse work.

BEANS UNDER GLASS.

Two crops of string beans have been grown in the greenhouses, but in both cases the results were anything but satisfactory. It does not seem possible to obtain a paying crop from this vegetable, although different varieties were used and different cultural methods tried.

OTTAWA.

IRRIGATION FOR THE VEGETABLE GROWER.

A system of overhead irrigation was installed at the Central Farm during the season of 1915. The whole vegetable area of the Horticultural Division, comprising some 6·8 acres, was completely equipped with the plant. Although no information is available regarding the benefits to be derived from irrigation, some suggestions are here presented.

Owing to the lateness of the season before the installation was completed, it was impossible to conduct any comparative test of the merits or demerits of irrigation, although the plant was successfully operated several times during the summer.

METHOD OF INSTALLATION.

The whole area under irrigation comprises 6·8 acres, and the system is so arranged that the whole area can be irrigated at one time. This demands a water supply of 320 gallons per minute after all friction heads have been deducted. As the field is located 1,600 feet from the source of water supply, a main pipe line of 1,600 feet of 4-inch galvanized iron pipe was the first step involved. Galvanized pipe was decided upon for underground work on account of its longer life than ordinary black iron pipe. Cast-iron pipe would, of course, have been better still, but, owing to its high cost, it was not considered. Had it been considered advisable to operate only one-third or one half the system at one time, the main pipe line could have been reduced to a 2-inch or 2½-inch pipe, with a consequent reduction in the cost of installation.

In addition to the main pipe line, another underground line was installed through the centre of the field. This is known as the feeder line, and every 50 feet along this line, 1¼-inch risers or uprights are attached. These risers supply the water for the nozzle lines. This feeder line is 775 feet in length and consists of 400 feet 3-inch pipe, 225 feet 2½-inch and 150 feet 2-inch pipe, the 3-inch pipe joining directly to the 4-inch main line. The underground system is not put below frost line at every point. From the water supply to the field the 4-inch line was made to run down hill a little and was put about two feet below the surface. Drain cocks were installed at both ends of the line, so that no water would be left in the pipes over winter. The feeder line, owing to a sharp hill in the field, slopes in two directions, and is drained from both ends. Care was taken, of course, that no pockets remained in the system to hold water over winter. The overhead system is installed in as permanent a manner as possible, that is, the nozzle lines are carried on galvanized iron posts set in cement, and are carried to a height of seven feet over the highest hillock. This permits a team of horses to work under the system of nozzle lines, without interference. These nozzle lines are directly attached to the risers and radiate from both sides. Each line is a separate unit in itself, that is to say, each line has its own turning union and shut-off and can be turned in any direction or shut off or put on without interfering in any way with the other lines. This makes 32 separate working units in the whole system. Each separate nozzle line is 190 feet long and consists of 60 feet of 1-inch and 130 feet of ¾-inch galvanized pipe. These overhead lines are supported by 1-inch galvanized iron posts placed every 15 feet and set in cement. The nozzle lines are 50 feet apart, so that by turning each line over, it is made to cover a 50-foot space, as the spray reaches 25 feet on each side of the nozzle line. The Skinner nozzles are placed every four feet on the nozzle lines and are in a perfectly level and straight row. This system is, of course, the most permanent and hence the most expensive method of installation. For a market gardener, desiring a somewhat cheaper installation, the overhead pipe lines could be carried on wooden posts resting on blocks of wood, or driven deeply into the ground. This would reduce the cost considerably. Another point is that already referred to, namely, that a smaller area could be installed at a much lower cost per acre, on account of the smaller feed line necessary.

OTTAWA.

The cost per acre is quite a factor and probably much greater than the average market gardener would care to expend on his field. It must not be assumed, however, that this system cannot be installed in a cheaper manner, for, as already mentioned, savings in equipment can be effected in one or two instances.

Had the overhead system been carried on 2 by 3 wooden posts, creosoted and driven into the ground, the cost for posts would have been not more than fifty dollars, whereas the galvanized iron posts cost $254.60. This one alteration would thus reduce the cost by $204.60. An additional saving is also made by using wooden posts in that the pipes are set in grooves or notches in the top of the post, thus doing away with the patent hangers and thereby saving $96 more. As the stakes are driven into the ground, no cement is necessary, as was the case with the iron posts, so that a further saving of $35.75 is here effected. Thus by simply using creosoted wooden uprights instead of iron posts, a saving of $336.35 could be made, without impairing the efficiency of the system whatsoever at the outset though the wooden posts would be much less permanent.

In most estimates or statements regarding the cost of installing an irrigation system, no estimate is allowed for leading the water to the field to be irrigated, thus many people claim that it costs from $125 to $200 per acre to install the overhead system of irrigation. These estimates assume that the water is, of course, close to the field and that it is only necessary to connect up with the main pipe line at close range. Such statements are rather misleading to the average grower, who naturally thinks that all items are included in these figures. In order, therefore, to present this question of cost in all its different aspects and to prevent the reader from gaining a false impression regarding the expensiveness of irrigation installation, assume that a two-acre field is to be irrigated, and that an estimate of the cheapest possible installation is needed. The cost of leading the water to the field will not be taken into consideration since that is a matter which will vary considerably with local conditions. Assuming that the field to be irrigated is 380 feet by about 300 feet in area, or in other words, about a two-acre field, to properly irrigate such a field, six lines of pipe, each 50 feet apart will be required. Each line would be 380 feet long, but should be divided at the middle into two separate units, each 190 feet in length. To feed this system, an underground pipe consisting of 150 feet of 2½-inch pipe and 150 feet of 2-inch pipe would be required. As there are several optional systems or plans of installation, each will be considered separately. The options are:—(1) galvanized pipe throughout, nozzle lines carried on galvanized uprights set in cement, (2) galvanized pipes above ground, black iron pipe underground, lines carried on iron posts, (3) galvanized pipe above ground, black iron pipe underground, lines carried on wooden posts, (4) galvanized pipes above ground and underground, lines carried on wooden posts. Of these options, No. 1 is the most permanent. Those options in which black iron pipe is used beneath ground would probably be somewhat shorter lived, but how much is not known. It may be that the difference in life is not enough to warrant the use of galvanized pipe. In those options in which wooden posts are used, if the posts are creosoted their life will be long enough for all practical purposes, the only objection to this plan being the clumsiness of the structure.

Before installing any system of irrigation, the question of water supply should be given serious consideration. The supply should be such that at all times sufficient water will be available to give the area a good drenching. An application of one-half inch per acre is considered a good application at one time. During an exceedingly dry spell, it will probably be necessary to give two such applications a week, or perhaps more. Some authorities always give an inch at each irrigation, claiming that one heavy irrigation is much better than several lighter ones. An acre inch, that is, enough water to cover an acre one inch deep is 27,154 gallons. This does not allow for any evaporation. This does not mean, of course, that this much water will actually cover an acre of soil one inch deep, for the water will naturally seep through the particles of earth and be absorbed. It means that 27,154 gallons would cover an acre one inch deep, providing there was no seepage or evaporation. If ten acres were being irrigated, the amount of water required would be 271,540 gallons. At thirty pounds nozzle pressure, one acre of Skinner irrigation system will deliver about fifty gallons per minute, so that to deliver an acre inch the system would require between nine and ten hours. The importance of a water supply will thus be recognized. In addition to the matter of quantity of water, the question of pressure must also receive consideration. This may be obtained by a high power pump, or by using a storage tank on a high elevation with a lower powered pump supplying this tank. The pressure at the nozzle lines should be, at least, thirty pounds, if the lines are put fifty feet apart, and may be correspondingly lower if the lines are put closer together. The static pressure at the tank, or the actual pressure at the pump, must, therefore, be considerably greater than this, in order to overcome friction and still have thirty pounds pressure left at the nozzle lines. All these points must be considered carefully before any installation is made and any person considering the installation of an irrigation system should give all the necessary data to the manufacturers, who will, in most cases, be ready to give expert assistance in figuring up the best source of water supply for the system.

Whether or not it will pay a grower to irrigate depends upon local conditions. There is no doubt but that under certain conditions irrigation will pay well. At the Central Farm last season the new strawberry plantation was practically saved by irrigation. During the early part of June the hot winds would dry out the upper portion of the sandy soil and blow it over the young plants, almost burying them beneath hot sand. By the use of the irrigation plant, this was overcome so that the plantation went into winter quarters with very few misses and an excellent growth of runners.

EXPERIMENTS IN GROWING VEGETABLE SEEDS AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA, IN 1915.

There is no doubt but that ever since the first settlements were established in Canada, about three hundred years ago, vegetable seeds have been saved from home-grown plants, and there are now many Canadians who grow their own corn, tomato, melon, bean, and pea seed, as well as other kinds; but comparatively few are growing celery, beet, cabbage, cauliflower, and onion seed, as the seed of these vegetables is not so easily grown.

The commercial production of vegetable seeds is limited to a very few persons in Canada, and the kinds of vegetable seeds grown commercially are few in number.

After the war broke out it was realized by the Government that there might, before long, be a decided shortage of those seeds of which France and Germany furnished a large proportion, and the time seemed opportune for encouraging Canadians to grow more seed themselves. A bulletin on "Growing Field Root, Vegetables and Flower Seeds" (Bulletin No. 22, Second Series) was, therefore, published by M. O. Malte, Ph.D., and W. T. Macoun, Dominion Horticulturist, in which information was given on the growing of certain kinds of seeds. Experiments were also begun on the Central Farm, and the results obtained are given in the following pages.

VEGETABLE SEED GROWING.

As most of our popular vegetables are biennial plants, that is, require two years in which to produce seed, it is necessary in this cold climate to resort to some means of holding the yearling plants over the winter. Last year at the Central Farm beets, carrots, cabbage, and celery were successfully carried through the winter season by storing in pits in the open, while onions were carried through in a root cellar.

Although the method of pitting adopted was probably not the best, improvements have been made this present season and a description may be of value.

A hole about 2 feet in depth, and as large as was needed, was excavated on a sloping piece of ground. Carrots and beets were placed in rows in this pit and covered with soil. Cabbages were also heeled in alongside the roots, being buried in soil up to the head, in a single layer or tier, and celery in a like manner, the latter being almost completely buried in soil till only the tips showed. Both cabbage and celery were placed in nearly upright positions. Over these vegetables a heavy layer of dry straw was placed, then a covering of boards, followed by tar paper and about 1 foot of earth. This was hardly sufficient covering to keep out frost, but most of the plants thus stored grew and produced seed.

Beets and carrots all came through without being injured at all and with very little loss due to rot. Some of the roots had started growth when taken from the pit and others were perfectly dormant. It was observed during the summer that the perfectly dormant ones, in every case, did better than those which started growth.

Cabbage also was free from rot and injury in most cases. Many of the heads, however, had put forth considerable growth, which proved injurious before the season was over, as the top grew too fast, before the roots had obtained a sufficient hold to supply them with food and moisture properly, the result being that when dry weather came they all drooped and died.

The celery in nearly every case was all gone with rot, excepting the heart, and was a sorry looking mess when planted, but despite this a better stand of celery was obtained than of any other crop. One variety, "Winter Queen," did not lose a single plant out of seventy-eight planted.

Onions, of course, were all in good condition, so that there is nothing special in this instance to be reported.

This season the roots have been pitted by themselves in a pit constructed as that shown in the illustration (fig. No. 1), while the cabbage and celery have been pitted in a similar manner to last year, with the exception that a ventilation shaft has been provided and alternate layers of straw and earth take the place of tar paper and boards, and will afford a better protection against freezing.

SELECTION OF THE SEED STOCK.

In order to obtain the best seed, seed which will produce first class vegetables, it is very essential that careful attention be paid to the selection of the vegetables the previous year to their bearing seed. Type is very important, and the grower must be acquainted with the varieties he is attempting to grow, in order that he may have a fixed type in his mind at harvest time in the fall.

From experience gained this past season, the following recommendations are made:—

Beets.—In harvesting beets for seed purposes they should first of all be pulled by hand, tops and all, then those roots which are full sized and true to type, selected and placed to one side, after which they may be topped, taking care not to cut too close to the crown buds, from which will start the seed bearing stalks of the following year. The roots of the beets should be left intact and not trimmed as for table use. When thoroughly dry they may be hauled to the pits, carefully, and piled in position for storage, or, if desired, they can be handled in bags, which is, perhaps the more desirable method of storing them, especially in smaller quantities.

Carrots.—Carrots are handled in a similar manner to beets, care being necessary to select only the roots that are true to type. If small or immature roots are selected the progeny will soon be of an inferior class.

Cabbage.—Cabbage should be pulled root and all, and the outside leaves removed. Care is necessary in handling, to avoid the breaking of the long tap-root.

Celery.—Celery should be lifted with the roots left on, and may be immediately heeled in in a shallow pit, care being taken to remove any diseased stalks and also to throw out any heads that are not true to type.

Onions.—In selecting onions for seed too much care cannot be given to type. Do not use any that show signs of producing big necks, or thick-necked onions. It would seem that vegetable growers could do much to improve their onion crop by growing their own seed with a rigid system of selection. All growers know how much a good crop of onions depends upon the source of the seed, probably more so than any other vegetable grown.

PLANTING.

The land to be used for seed production was thoroughly ploughed in the spring and heavily manured, and the plants set out as soon as possible in early spring. The distances recommended in the different varieties are as follows:—

Cabbage, carrots and beets should be planted in rows 30 inches apart, with the plants two feet apart in the rows. This may seem rather close, but if placed too far apart the plants are apt to lie down when loaded with seed, whereas if they are fairly close together each will support the other to a large extent. In the case of celery the rows should be the same distance apart, but the plants only one foot apart in the rows, while onions are placed only 6 inches apart in rows 30 inches apart.

Constant cultivation is necessary at the beginning of the season, especially, but in the case of a slow maturing seed like celery, cultivation may be discontinued in late summer to hasten the maturity of the seed.

HARVESTING AND CLEANING.

The different vegetables require different methods of harvesting, each one being a problem in itself. Probably the simplest crop to handle is that of beet, this vegetable ripening its seed nearly all at once. In harvesting beet seed it is only necessary to remember to cut it in the green stage, just as it is commencing to turn brown. In order not to jar the plant any more than is necessary it should be cut with a sharp spade just at the ground, thus removing the top part of the root with the stalks attached. The man cutting may be followed by another who ties the cut seed stalks into bundles, he again is followed by a man with a spade who cuts off the attached piece of root, thus leaving the stalks tied in bundles ready for stooking. The stooks should not remain in the field many days before they are threshed, as it is considered better to thresh them slightly in the green stage and allow the seed to ripen after threshing. If only small lots are being handled, a flail will serve for threshing, if large lots, an ordinary threshing machine serves admirably.

The seed may be fairly well cleaned by an ordinary fanning mill, but this will not take out all sticks, etc., although grading the seed fairly well. To remove the sticks the seed is put over a revolving endless belt which is on a steep incline, the seed rolling down the belt to a box, while the sticks and dirt are carried on over the other end. Fig. 2 shows the arrangement in use by the Horticultural Division. By using the electric fan the dust and light seed are blown out before it strikes the belt, thus giving a nice clean sample of seed. The apparatus is one that can be readily made by any person who is at all handy with tools and serves excellently for fairly large lots of seed.

Carrots.—Carrot seed is not as easily harvested as beet seed. Several pickings are necessary in the case of carrots, as the heads all ripen at different intervals, extending over a long period. The ripened heads may be clipped off from time to time when necessary and gathered in baskets and stored awaiting threshing. The threshing and cleaning of carrot seed is a much more difficult task than handling beet seed. In order to separate all the seed and to have all the fine hairs and edges broken off, it should be thoroughly dry and ripe before threshing and should only be threshed on a cool, dry day. Probably two threshings will be necessary to obtain well rubbed seed. If small lots are being handled the seed may be separated in a bag by beating with a stick. The ordinary fanning mill will clean and grade with the exception of removing the sticks which it seems impossible to get rid of with ordinary fanning mills and separators.

Celery.—Although celery seed does not all ripen together, there being blossoms still unopened at harvest time, this year's experience goes to demonstrate that it may be successfully cut on the slightly green side, before a great deal of the early seed has matured sufficiently to drop off. This appears to be a more practical way of handling than by making several cuttings, for in the case of celery it is very tedious and expensive work to gather small lots of seed as it ripens. Of course it will probably be necessary to go over the plants once to get the earliest seed if one wishes to save it, otherwise it will shell before the plant has sufficiently matured the major part of its crop. When cut, the heads, or stalks, as the case may be, should be handled very carefully, and, if possible, should be handled on sheets, for celery seed, when dead ripe, and there will always be in a portion in that stage, shells very easily. As celery seed is very expensive a grower could afford to give special attention to these details. When cut green, the stalks should be placed in a drying shed to dry before shelling. The shelling is more difficult than with most seeds for there is always a considerable portion which will adhere to the heads unless rubbed quite firmly. This, no doubt, is the fairly green seed, which when ripened inside does not shell as easily as when ripened in the open.

An experiment in which equal quantities of Winter Queen celery were cut on the green side and allowed to ripen in the field, and gathered at intervals, gave results in favour of cutting green. The green cut plants gave a yield of 2 pounds 7½ ounces of No. 1 seed from thirty-four plants, while that cut ripe gave a yield of 1 pound 14½ ounces from 34 plants. The ripe seed gave a fifteen day germination test of 72 per cent, while the green cut plants germinated 93 per cent in the same time.

The seed after being separated from the stalks was put through a Clipper fanning mill, which did excellent work in cleaning the seed.

Cabbage.—From evidence obtained this past season, cabbage plants which are perfectly dormant do much better in the long run than those which have thrown up a seed stalk while in the pit, the former appearing to be more thrifty and yielding larger quantities of seed. It is difficult to decide when to cut cabbage plants like most of the other vegetables. The early bloom is ripe before the mid-summer bloom has set seed, so that no matter how the grower works it there is always an apparent loss at harvest time. At the Central Farm this year the plan of cutting off the earliest pods was adopted, while the later ones were left until harvest time when the whole plant was harvested, as soon as the majority of the seed pods had commenced to turn yellow. The seed in a cabbage pod commences to darken and harden before the pod dries up, so that if cut at the stage mentioned above the bulk of the seed will mature in the pod and the loss due to shelling will be greatly reduced. The cabbage seed may be threshed by flail or by machine, and a Clipper mill will do excellent work at cleaning it, as will also the machine shown in fig. 2.

Onions.—Onion seed, even if the whole field does not ripen together, which, however, it generally does, is easily gathered head by head. If thoroughly ripe it can easily be shelled by light threshing and with a fanning mill and low wind can be readily cleaned. The onion seed plot at the Farm this year was not a fair test as many varieties were grown and in order to keep them pure, the heads were put in paper bags, thus undoubtedly reducing the yield.

YIELDS.

Below will be found the average yield per plant of some of the different varieties of vegetables, together with a germination test.

YIELDS of seed from different vegetable plants, Central Experimental Farm, 1915.

Vegetable.	Maximum yield per plant.	Average yield per plant.	Lowest yield per plant.	Germination.
	oz.	oz.	oz.	
Beet	12	5·6	1·3	88–97
Carrot	.....	2·5	....	85
Celery (green)	.....	1·18	....	93
Celery (ripe)	.....	1	....	72
Cabbage	2·25	2	1·75	90–100

The following number of plants of each kind of vegetable was grown by the Horticultural Division in 1915. A note regarding the total amount of seed grown is also appended. It must be remembered that many of the varieties were grown under cotton covers to keep them from crossing and that this materially reduces the yield. The average yields per plant referred to in table No. 1 were computed from plants that were not covered and hence will not compare with those here referred to, which are total yields of covered and uncovered. The piece of land used for growing these seeds was 100 by 40 feet in dimensions.

Number of Plants and Weight of Seed Produced at Central Experimental Farm, 1915.

Variety.	Number of plants.	Weight of seed.		Approximate retail value	
		lb.	oz.	$	
Cabbage	66	2	9	5·20	
Celery	186	9	9	43·87	
Carrot	176	9	12	16·06	
Beet	113	40	9	50·00	
				115·13 =	$1,253· per acre.

The above estimate of value is based on the retail price per pound of the different kinds of seed.

N.B.—As the cabbage plants were nearly all covered, the amount of seed set was very light.

OTTAWA.

ORNAMENTAL GARDENING.

F. E. Buck, B.S.A., *Assistant in Charge.*

The report which follows dealing with ornamental gardening activities at the Central Farm at Ottawa during 1915-16 is written from the standpoint, this year, of the progress made in some of the more detailed phases of the work.

CHINA ASTERS.

The annual aster, or more correctly the China aster, is now one of the most popular flowers grown. In its season it is without a rival. The aster came from China about 1731. It is botanically known as *Callistephus chinensis* or *hortensis,* which signifies " beautiful crown."

A large number of varieties has been under trial for some years at Ottawa and also at the branch Farms. For the past two or three years, in addition to the main or variety trials, experiments and observations have been made to gain information on a peculiar and modern affection of the plants sometimes called aster "yellows." The experiments will be carried on for another year, however, before results are given.

DIFFERENT TYPES OF ASTER.

The original aster was single in form and almost two feet high. Soon after its introduction into Britain double forms became the rule. About 1850 the "quilled" type was originated. This type is so named on account of the quilled or rolled form of its florets. The flowers of this type are almost globular in shape.

Since that date all the other forms or types have been produced. Attention was first given to producing dwarf and bedding types. Then followed in the eighties and nineties of last century the strap or flat-rayed types like the Comet asters and the loose fluffy types like the Ostrich Plume. These remain to-day great favourites.

Deservedly, however, the most popular types to-day are the branching asters. These produce flowers of both globular and somewhat flattened form. The flowers are of large size, borne on long, strong stems, making them excellent for cutting.

During recent years these branching asters have given most satisfaction at the Farms, although all other forms are still grown in limited quantities as well.

CLASSIFICATION OF THE ASTER.

There are several systems of classifying asters, some more elaborate perhaps than necessary. The system which follows is one aiming at simplicity and practicability. In describing the best asters some system of classification is necessary. Those, however, who grow these flowers for general use are not interested in any elaborate or botanical classification. What is sought, therefore, in the following system is to group together asters which are similar in main characteristics of vigour and size of plants, and general type or size of flowers.

The asters mentioned in group 1 consist of varieties which are highly recommended.

1. The plants are large and generally vigorous. From 1½ to 2½ feet high.
2. The flower stems are long and generally thick.
3. In some cases the stems branch from the main stem in all directions; in other cases they are upright or only partly spreading.
4. The flowers are of large size and lasting in quality either on the plant or when cut.

Group 1.

Branching Asters.—Branching asters are divided into two classes, early and late. They are without doubt the best asters for the gardens of the amateur. The plants are large and vigorous; the stems long and generally thick; and the flowers full and double to the centre, and of large size. Colours are numerous. Amongst the early branching the White, Rose, Crimson, Dark Violet, and Shell Pink, are good varieties. Amongst the late branching the following varieties are recommended, Snow White, Peach Blossom, Semple Pink, Deep Pink, Rose, and Dark Violet.

King Asters.—Plants similar in habit of growth to the branching asters. The florets of the flowers, however, are long, narrow, and folded lengthwise, somewhat similar to the quilled asters. Last well when cut. Colours recommended, White King, Rose King, Violet King, Pink King, and Crimson King.

Perfection Asters.—Plants vigorous. Flowers large and attractive, with the middle rows of florets whorled. Colours recommended, White Perfection, Rose Perfection, Purple Perfection, Crimson Perfection.

Truffaut and the French Paeony-flowered asters are strains of asters which are similar in all the essentials to the above. The flowers of these asters are ball-shaped and the individual florets incurved.

Late Upright.—The plants of this strain of asters are very upright in habit of growth, although in other respects they are similar to the late branching. Their upright habit permits of much closer planting, and the blossoms are very seldom soiled by rainstorms. Colours recommended, White, Peach Blossom, Crimson, and Purple.

Imperial Asters.—This is another strain of asters the plants of which are upright in habit of growth. The stems are long and the flowers large and ball-shaped. The noted Daybreak is included in this class. They are rather earlier than some of those previously mentioned. Varieties recommended, Giant Daybreak, Giant Purity, Imperial Violet, Imperial Yellow, Imperial Salmon, and Imperial Rose.

Various Special Varieties:—

Pink Enchantress, a beautiful pink aster with graceful flowers.

Semple Late Branching Pink, another beautiful pink aster with graceful flowers.

Autumn Glory, a late branching aster, shell-pink in colour.

Mammoth Asters, a type of large flowering asters resembling chrysanthemums. Borne on long stems. Suitable for cutting. Colours various.

Giant French Paeony-flowered. Flowers of large size on good strong stems.

Non-Lateral Branching. Plants similar in habit to the late branching.

Ray Asters. An aster which has good lasting characteristics and does well in a wet season. Plants vigorous and flowers large. Colours white and pink.

Comet and Ostrich Plume Types.—The plants of these varieties are not quite so large as those preceding. The flowers, however, are very beautiful. They are somewhat flattened, with the individual florets narrow, very long, and gracefully reflexed. The florets towards the centre of the head bend and curl across each other giving to the flower a fluffy appearance. Varieties recommended, Rochester, Shell-pink Rochester, White Rochester, Crimson Rochester, and Dark Violet Rochester.

Crego, and Hohenzollern: White, Shell-pink, Lavender and Rose.

Ostrich Plume, late flowering: A good strain flowering after the ordinary Ostrich Plume are over. Colours white, shell-pink, and blue.

Mikado Comet, varieties recommended: White, Rose, Dark Violet.

Triumph Comet: in various colours, also special varieties of the Comet type such as Meteor and Blushing Beauty.

Group 2.

The asters placed in group 2 are in all cases recommended, but are varieties which are not so attractive in colour, so large, or so excellent in some other characteristic as those in group 1. They are also suitable for general cultivation in a small garden, and should be grown where space is available, and where variety of type is desired.

Early and Late Branching.—The colours not included in group 1.

King Asters.—The colours not included in group 1.

Comet and Giant Comet.—Colours not included in group 1.

Ostrich Plume.—Colours not included in group 1.

Victoria Asters.—Particularly the white, rose, and scarlet. These asters are produced freely on plants of upright habit of growth and are suitable for bedding purposes. The florets of the flowers are reflexed.

Early Flowering Royal Asters.—An early aster similar to the Early Branching.

Anemone-flowered Aster.—A rather new introduction, the flowers of which are large in size and have curled central florets, pink in colour.

Fire King Aster.—A dwarf crimson-scarlet aster, very suitable for bedding purposes.

Sutton Snowball.—Pure white aster and one of the best for bedding purposes.

Group 3.

The asters placed in this group are, as a rule, grown for special purposes. They are inferior in size, height and attractiveness to those in the first two groups, and should be grown only when early or bedding types are required.

Queen of the Market.—An early aster of rather spreading habit; season of bloom short; useful for cutting for the early market.

Superb Bedding.—A good aster, rather dwarf, useful for bedding purposes.

Alexandra.—Early type of aster of spreading habit of growth.

Dwarf Victoria.

Dwarf French.

Dwarf Chrysanthemum-flowered.—These last three types are all useful as bedding asters.

Single Asters.—A race of asters which has become popular with some during the past few years. Colours various. Useful for cutting.

GROWING THE ASTER.

The asters at Ottawa are grown from seed imported from Europe, the United States and from home-grown seed. The seed is sown about the middle of April. The plants are pricked out into hotbeds about the middle of May, and transplanted into the test plots about the first week in June.

Fairly good plants are also sometimes obtained by sowing the seed in the open ground about May 15, and thinning the plants out to about 9 inches apart.

The blooming season of the asters commences about the middle of July, when the early asters such as the Queen of the Market and Alexandra commence to bloom.

The majority, however, do not start to bloom until about the first week of August, while the late varieties such as the Late Branching and the Late Upright commence to bloom as late as the second week of August. The early asters are over in about three weeks and for this reason are not highly recommended. The main crop of asters, however, is not over until about the third week of September.

Asters succeed in any good type of soil which is well watered and well cultivated.

ASTER TROUBLES.

China asters are not troubled to any extent with diseases or insects. The stem rot is not uncommon. It may be prevented, however, by care in watering, so as to guard against a soggy condition of the soil, especially when the asters are young.

The orange rust, which attacks the plants on the underside of the leaves when about 6 inches high, may be controlled by one or two sprayings with ammoniacal copper carbonate. Care should be taken to see that the spray reaches the underside of the leaves.

The aster beetle should be controlled by a poison spray, and the tarnished plant bug by nicotine or kerosene emulsion.

NOVELTIES AND NEW VARIETIES OF ANNUAL FLOWERS.

Under this heading brief notes are given each year on a number of annual flowers which make their appearance for the first or second time in the test plots of annual flowers grown at the Central Farm at Ottawa. Several hundred varieties are grown for trial purposes. Each year all of the large seedsmen offer "novelties" or new strains and the seeds of these are obtained and the plants grown in the trial plots for comparison with the ordinary varieties. This year rather fewer than usual were of special note. Altogether about three dozen flowers, which were either novelties or only recently offered to the Canadian public, were tested.

Carnation: Improved Marguerite.—Plants about 18 inches high, producing an abundance of fringed double flowers. Various colours. In bloom from August 19 till late October. Attractive in the border and most useful for table decoration.

Carnation: Perpetual Early Flowering.—Very similar in most respects to the Marguerite variety mentioned above, and as highly recommended. In bloom from August 16 till late October.

Dianthus Heddewigii (Japan Pink).—Superb single varieties. Plants 9 to 12 inches. Free flowering habit. Flowers large size, brilliantly coloured. In bloom from August 1 till late October. Useful for bedding and the flowers suitable for bouquets.

Datura chlorantha flore pleno (Datura, Horn of Plenty).—Plants from 2 to 3 feet high with large leaves and making rather rank growth, with slightly fragrant yellow double trumpet-shaped flowers. Rather attractive. In flower from August 20 until October 11. Useful for the border or in a position where a strong foliage plant can be used.

Datura Wrightii.—This variety is much larger than the former, growing from 3 to 4 feet high. The flowers are trumpet shaped, single and pure white. A large plant with a sub-tropical appearance and can be used to advantage in the back of the border or in the centre of a bed. In bloom from July 19 until October 11.

Lobelia.—During the past few years the Farm has tested about twenty-four different varieties of bedding Lobelias. Of these the following are considered the best:

Ramosa (Tenuior), pale blue, height 9 to 12 inches; Ramosa (Tenuior), blue, height 9 to 12 inches; Spreading Basket, blue; Compact Lustrous, dark blue, height 6 inches.

The Ramosa types are somewhat new but on account of the size of their individual flowers together with the brilliancy of the blue, these Lobelias are very attractive strains.

Maurandya purpurea grandiflora.—This is a slender climber which would be very useful for window-boxes, although it is frequently used for conservatory purposes. It blooms continuously although not very profusely. In bloom from August 1 to late October.

Nycterinia selaginoides.—Plants about 9 inches high, with an appearance very similar to Sweet Alyssum. Flowers borne in profusion and sweet-scented, pale blue and white in colour. In bloom from July 6 until August 22. Useful for edging, or in the front of the border.

Pentstemon, Giant Mixed Colours.—Plants 1 to 2 feet high, producing long flower spikes on which are contained very attractive bell-shaped flowers of varied colours. Grown as annuals they make very useful flowers for cutting, or for border effects towards the end of the season. In bloom from July 29 until late October.

Sanvitalia procumbens.—Plants about 6 inches high, of very spreading habit of growth so as to form a carpet, in a sandy type of soil from 2 to 3 feet wide, which is covered with small, yellow flowers that are produced in considerable quantities during most of the summer. In bloom from June 27 until October 11. Useful for rock gardening or for edging where space is not a consideration.

Sunflower.—Plants 3 to 4 feet high, of very branching character, producing a large quantity of flower heads from side branches. During the past few years several novelties have been put on the market under various horticultural names. The New Red and Unique are two of the varieties that have been tested. Grown side by side, however, there is very little difference noticed in the character of the plant, and hardly sufficient difference in the colour of the flowers to make it worth while growing more than one of these varieties. The Red Sunflower was perhaps the most attractive grown at Ottawa this year. Useful where large flowers are required and for the back of the border. In bloom from July 4 until October 11.

Thunbergia alata.—Plants much used as a greenhouse climber and for suspended baskets. It does not do well, however, when grown outside. It spreads in a thick, compact mass and its canary-yellow flowers are rather attractive. In bloom from July 6 to October 11.

Zinnia, Curled and Crested, Double.—Plants very similar to the ordinary well-known Zinnia. Height about 18 inches. Flowers, however, are as the name suggests, curled and crested. A novelty of the past few years, not very attractive but still a good addition to the easily grown annuals. Colour various. In bloom from July 1 until October 11.

Dianthus, Lucifer.—A novelty of 1915. Plants about 12 inches high. A very fine addition to the Japanese Pink. Free flowering with bright scarlet flowers. Early in coming into bloom. In bloom from July 20 till late October.

VARIETIES WITHOUT SPECIAL MERIT.

The following varieties were also grown for test for the first time this year but are not described at length for the reason that they have no special merits to justify giving them a place amongst the above or a place in preference to better known varieties of the same flowers:—

Sunflower, Unique Red, similar to New Red.
" Langley Gem, similar to New Red.
Zinnia, Double Curled and Crested.
Cuphea miniata.
Ornamental Chilian Beet.
Red Mountain Spinach (*Atriplex hortensis*).
Double Mixed Daisies (*Bellis*).
Salvia patens, Early dwarf, blue flowered.
Tithonia speciosa.

BULBS.

For growing in pots for house decoration, the class of plants known as "bulbs" has few rivals. This is due to the fact that few flowers can be grown with such a minimum amount of care and attention. By following a few of the simplest rules beautiful blossoms always result.

A previous report treated of bulbs as flowers for beds and borders. The list of bulbs which follow in this report consist of those which have been found to be specially suited for forcing in the house or greenhouse.

The bulbs are received about September of each year and are potted up into 6-inch pots during October. Ordinary greenhouse soil consisting of rotted sod and a little sand is used for potting. The pots are then placed in a cool root cellar for several months. During this period roots are formed.

The Narcissi and early tulips are brought up into the greenhouse towards the end of December or early in January. For the first few days, after coming up from the semi-darkness of the cellar, they are kept in a subdued light. Immediately they are placed in the full light and heat, growth takes place very rapidly and they may be brought into flower in about three weeks from the time they are brought up. To obtain a continuity of bloom some are retained in storage for several weeks longer.

The Darwin tulips are brought up last, generally as late as the middle to the end of February. This lengthens the blooming season of the house bulbs, which by this method lasts for about three months.

Successful culture of bulbs in the house may be epitomized thus:—

(1) Pot reasonably early in any good porous soil.

(2) Place in a cool cellar or room and water regularly or when the soil appears to be in need of water.

(3) Maintain the temperature of the storage room at about or not above 40 degrees.

(4) After about two months bring up into a temperature of from 50 to 60 degrees and into partial light for about a week.

(5) Then place in full light and water amply and regularly.

(6) When in bloom, again place in a cooler temperature, where it is possible to do so. This prolongs the life of the flowers.

Bulbs for House Culture.

Early tulips:—

Albion or White Hawk	White	Flower of good substance; lasts well.
Joost van Vondel	“	The largest pure white tulip, of fine form.
Pottebakker, white	“	
La Reine	“	White sometimes turning pink.
Gold Finch	Yellow	Sweet scented and lasts well.
Mon Tresor	“	Suitable as an early variety for forcing.
Primrose Queen	“	Sulphur yellow, attractive.
Yellow Prince	“	Yellow tinged pink, sweet scented.
Cottage Maid	Pink and White	
Pink Beauty	“ “	Bright pink.
Rose Grisdelin	Pink.	
Belle Alliance	Scarlet	Scarlet, sweet scented.
Cramoisie Brilliant	Vermilion.	
Crimson King	Crimson scarlet.	
Vermilion Brilliant	Brilliant vermilion	Large flower, easy to force.
Prince of Austria	Orange vermilion.	
Proserpine	Carmine..	
Thomas Moore	Apricot orange	Distinct colour, fine shaped flower, sweet scented.

An excellent choice from the above would be:—

Joost van Vondel	for White.
Gold Finch	“ Yellow.
Rose Grisdelin	“ Pink
Vermilion Brilliant	“ Scarlet.
Primrose Queen	“ Light yellow, attractive and distinct.
Thomas Moore	Apricot orange, attractive and distinct.

Late Tulips (double)—

Couronne d'or	Deep yellow.
Imperator Rubrorum	Bright scarlet.
Murillo	Fine pink.

Darwin Tulips (Late Flowering).—Outside in the perennial border the Darwin tulips form one of the most attractive features in the month of May. During the past few years experiments have been carried on in forcing them in the greenhouse for inside decorations. Extremely satisfying results have been obtained. They are potted in October with the ordinary tulips but are not brought up for flowering until about the middle of February. By proper handling they may be made to give a succession of magnificent bloom from that date until the middle of April. The following varieties have been found to be best suited for forcing in the greenhouse. They will force in the dwelling house also, but are not so satisfactory there as they are liable to become too tall unless they get abundant light.

	Colour.
Baronne de la Tonnaye	Bright rose, margined blush.
Bartigon	Bright fiery red.
Beauty	Pink shaded mauve.
Clara Butt	Delicate salmon pink.
Edmee	Deep rose pink.
Europe	Scarlet, white at base of petals.
Galathea	Brilliant salmon scarlet.
General de Cordous	Turkey red, blue at base of petals.
Geefs	Rosy crimson shaded blue.
Glow	Vermilion-scarlet, blue base.
Isis	Fiery crimson scarlet.
King Harold	Bright crimson.
Loveliness	Soft carmine rose.
Margaret	Silvery white and pink.
Madame Krelage	Soft rose shading to white.
Ouida	Brilliant scarlet.
Pride of Haarlem	Rose suffused purple.
Professor Rawenhof	Bright cherry red.
The Sultan	Glossy maroon black.
Whistler	Blood red, violet base of petals.
Wedding Veil	Lilac white.

Narcissi.

Trumpet Section—	Colour.	Fuller Description.
Madame de Graaf	White	Perianth pure white, trumpet nearly white.
Empress	Bicolor	" " " " rich yellow.
Victoria	"	Perianth creamy white, trumpet rich yellow.
Golden Spur	Yellow	The earliest variety for forcing.
Princeps	"	Trumpet a deeper yellow.
Emperor	"	Perianth yellow with trumpet a deeper yellow.
Other Types—		
Poeticus ornatus	White	White perianth margined with scarlet.
" Glory	"	White perianth eye margined with scarlet, larger flowers.
Barri conspicuous	Bicolor	Yellow perianth, short cup edged with orange and scarlet.
" Seagull	"	White perianth, yellow cup.
Sir Watkin	"	Perianth primrose, large yellow cup.
Chinese Sacred Lily	"	White with yellow cup.
Paper White Polyanthus	White	Pure white.
Double Van Sion	Yellow	Double golden yellow.

Freesias.

Refracta alba	Pure white.
Hybrids	Pink and lavender shades.

Some Good Hyacinths.

La Grandesse	Snow white.
Madame Van der Hoop	White, late flowering.
Yellow Hammer	Golden yellow.
King of Yellows	Golden yellow.
Charles Dickens	Pink.
Gigantea	Blush pink.
Enchantress	Clear light blue.
Grand Lilas	Porcelain blue.
King of Blues	Dark blue.
Lord Balfour	Pinkish mauve.
General Pelissier	Carmine red.

THE CANNA.

A large number of Cannas have been grown for a number of years at Ottawa. They have been used for bedding purposes and grown also in the test plots in order to obtain information as to their relative merits.

The Canna is a sub-tropical plant of easy culture which can be used effectively as a bedding plant, as a foliage plant in the border, or as both a foliage and a flowering plant in the greenhouse or conservatory. During recent years it has gained in favour and in popularity and has undergone as a flowering plant many improvements.

The most recent introductions are the Orchid-flowered Cannas. Prior to their introduction the Gladioli-flowered or "Crozy Dwarf" were considered vast improvements on the older species and varieties. Hybridizing and selecting has been carried on both in Europe and on this continent, and to-day the Canna is a commercial flower of considerable importance.

The Canna can be raised from seed which should be started early in the year, in order to give bedding plants for the same season. It is generally propagated, however, by division of the stored roots. Canna roots should be dug in the autumn as soon as the tops are killed by frost. After drying for a few days they should be stored in a frost-proof cellar, which must not be damp, nor too cool, otherwise they are apt to rot. On the other hand if the cellar is too dry they should be covered with some coarse material or placed in dry sand.

About the last week in March or early in April the old roots should be divided and potted in good soil. Careful watering should be practised until the shoots are several inches long. If the spring is warm growth is then inclined to be very rapid and it may be necessary to keep the plants in a cool place in the greenhouse to check growth.

Otherwise they are apt to be ready for planting out before danger from frost is passed, as a late spring frost will kill them back to the ground. In Ottawa, planting out generally takes place about the first week in June. The Canna requires a rich soil, retentive of moisture. In such a soil, when the summer is hot, and water is supplied liberally, their growth is most rapid and luxuriant.

The flower spike, as well as the colour, size, and lasting habits of the individual flowers, are points which are considered when estimating the relative merits of a good bedding Canna. As the Canna is to a large extent a foliage plant the height of the plant as well as the colour of its foliage, has to be considered.

The Cannas mentioned in the following list are those which have been tested at the Farm during the past twelve years. Following this complete list will be found other lists giving some of the best varieties, together with lists giving tall and dwarf varieties.

It should be added, however, that in some parts of Canada the Canna does not succeed well. This is because it is a tropical plant and must have a certain amount of heat. It must also be pointed out that in some cities of Canada one variety will do much better than it will at Ottawa. This is due also to seasonal effects, and adaptations to local conditions. Many of the newer varieties of Cannas are not procurable as yet in the smaller cities.

The final list of Cannas, therefore, consists of varieties which growers in various parts of the Dominion have found to succeed under average conditions.

COMPLETE List of Cannas Tested at Ottawa.

Africa, orchid flowered.
Alfred F. Conard.
Allemania, orchid flowered.
Alphonse Bouvier.
America.
Aphrodite, orchid flowered.
Asia.
Austria, orchid flowered.
Baron de Poilly.
Bassett's Red.
Bavaria.
Beacon.
Beaute de Poitevine.
Black Beauty.
Brandywine.
Burbank, orchid flowered.
Buttercup.
California.
Captain Druyon.
C. Bernardin.
C. Henderson.
Charles Paul.
Chautauqua.
Cherokee.
Chicago.
Cinnabar.
Comte de Bouchaud.
Comte de Sachs.
Comte Horace de Choiseul.
Conowingo.
Comet Improved.
Crimson Bedder.
Dagana.
David Harum.
Depute Ravarin.
Director Holtze.
Discolor Gigantea.
Dr. Budingen.
Dr. E. Ackerknecht.
Dr. Marius.
Dr. Nansen.
Dr. Robert Funcke.
Duke of Marlboro.
Gladiator.
Goliath.
Golden B.
Governor Roosevelt.
Grandiflora.
Graf Oswald de Kerchove.
Grand Chancellor Buelow.
Gustave Gumpfer.
Halley's Comet.
Harry Laing.
Hof Gardtner Hoppe.
Hof Garden Director Lanche.
Hortense Barbereau
Hugues Lapaire.
Hungaria.
H. Wendland.
Indiana.
Inglewood.
Italia, orchid flowered.
J. B. Deleuil (The Butterfly Canna).
J. D. Cabos.
J. D. Eisele.
J. H. Veitch.
Johanna Kanzleiter.
Joseph Combit.
Jupiter.
Kaiser Wilhelm.
Kate Deemer.
King Humbert, orchid flowered.
La France.
Leon Pepin Lehalleur.
Leonard Vaughan.
Louisiana, orchid flowered.
Louise.
Luray.
Madagascar.
Martha Washington.
Menelek.
Mephisto.
Meteor.
Minnehaha.
Miss Berthine Brunner.
No. 1507.
No. 2739.
Olympic.
Ondine.
Pandora.
Papa Canna.
Papa Nardy.
Parthenope, orchid flowered.
Patrie.
Paul Lorenz.
Paul Marquant.
Peach Bloom.
Pennsylvania, orchid flowered.
Pillar of Fire.
President Cleveland.
" McKinley.
" Meyer.
" Vermorel.
Prof. Hugo de Vries.
Prof. Rodenwaldt.
Prof. Romberg.
Progression.
Queen Charlotte.
Queen of Holland.
Richard Wallace.
Robert Christy.
Roi des Rouges.
Rosea Gigantea.
R. Pearson.
Rubin.
Sam Trelease.
Secretaire Chabanne.
Shenandoah.
Souvenir de Jeanne Chaure.
Souvenir de A. Crozy.
Souvenir de Leonie Veinnot.
Souvenir de President Carnot.
Splendor.
Stradtradt Heidenriech.

OTTAWA.

COMPLETED List of Cannas Tested at Ottawa—*Concluded.*

Striped Beauty.
Suevia.
Eastern Beauty.
Egandale.
Eldorado.
Elizabeth Hoss.
Explorateur Crampbel.
Evolution.
Fair Hope.
Feuermeer.
Flamingo.
F. L. Harris.
Florence Vaughan.
Francois Billard.
Franz Buchner.
Frau Marie Nagel.
Furst Bismarck.
Furst von Hohenlohe.
General Merkel.
Gladiflora.
Mme. Crozy.
Mme. Favrichon.
Mme. Jean Beurier.
Mme. Leon Leclerc.
Mme. Marguerite Muhle.
Mme. Montefiore.
Mme. Pichon.
Mont Blanc.
Mount Etna.
Mrs. Alfred F. Conard.
Mrs. G. A. Strohlein.
Mrs. Karl Kelsey, orchid flowered.
Mrs. Kate Gray, orchid flowered.
Mlle Berat.
New York.
Niagara.
Sunray.
Tarrytown.
The Express.
Tisza.
Triumph.
Uncle Sam.
Veinnot.
Venus.
Wabash.
Wawa.
West Virginia.
Wilhelm Bofinger.
William Saunders.
Wm. Griesinger.
Wyoming, orchid flowered.
Yellow Crozy.

LIST of fifty best Cannas. Those marked * have purple foliage.

	Description.
Allemania, Orchid flowered..	Salmon with golden markings.
*America..	Salmon scarlet.
*Brandywine..	Cherry red, margined crimson chocolate.
Chicago..	Salmon rose.
Cinnabar..	Salmon scarlet and yellow margin.
Crimson Bedder..	Bright crimson scarlet.
*Dagana..	Scarlet dotted crimson.
*David Harum..	Bright-vermilion scarlet.
*Discolor Gigantea..	Seldom blooms. Grown for foliage effect.
*Dr. Budingen..	Crimson scarlet.
Dr. Robert Funcke..	Crimson.
Eldorado..	Golden yellow spotted red.
Elizabeth Hoss..	Yellow spotted red.
Fair Hope..	Crimson flaked orange.
Feuermeer..	Fiery scarlet shaded crimson.
General Merkel..	Scarlet suffused orange and yellow.
Gladiflora..	Yellow blotched scarlet.
Gladiator..	Yellow spotted dull red.
Grandiflora..	Salmon red and cerise.
Grand Chancellor Buelow..	Scarlet suffused deep crimson.
*Hof Gardtner Hoppe..	Red mottled crimson.
Hungaria..	Pink shading to cream.
Indiana..	Orange shaded salmon.
J. D. Eisele..	Scarlet shading to crimson.
*J. H. Veitch..	Crimson scarlet.
Johanna Kanzleiter..	Yellow marbled carmine.
Jupiter..	Bright red bordered golden.
*King Humbert, Orchid flowered.. ..	Orange scarlet, red markings.
Louisiana, Orchid flowered..	Glowing scarlet, orange throat.
Louise..	Flesh marbled carmine.
Mephisto..	Crimson-maroon.
Meteor..	Scarlet suffused crimson.
Miss Berthine Brunner..	Yellow spotted carmine.
Mme. Marguerite Muhle..	Rosy cerise.
Mrs. Alfred F. Conard..	Salmon pink.
*Mrs. G. A. Strohlein..	Magenta and scarlet.
Mrs. Kate Gray..	Crimson gold.
*New York..	Crimson shaded darker crimson.
Pennsylvania, Orchid flowered..	Vermilion scarlet and orange.
*President Meyer..	Carmine and scarlet.
Progression..	Golden yellow spotted bronze.
Queen Charlotte..	Scarlet bordered yellow.
Richard Wallace..	Yellow, slightly spotted.
*Rubin...	Ruby carmine.
Tarrytown..	Pinkish cerise and crimson.
Uncle Sam..	Orange scarlet.
Venus..	Rose-pink, mottled cream.
Wilhelm Bofinger..	Orange-scarlet.
*Wm. Saunders..	Crimson.
*Wyoming, Orchid flowered..	Orange.

OTTAWA.

The following are some of the best Tall varieties, growing 5 to 6 feet high:—

Fair Hope.
Indiana.
Mrs. Kate Gray.
Wyoming.
Pennsylvania.
Uncle Sam.

Medium varieties, about 4 feet high:—

Allemania.
America.
David Harum.
Cinnabar.
Dr. Robert Funcke.
Eldorado.
General Merkel.
Louise.
Mme. Marguerite Muhle.

Dwarf varieties, about 2 feet high:—

Dagana.
Dr. Marcus.
Brandywine.
Gladiator.
Crimson Bedder.
Wm. Saunders.

LIST OF CANNAS WHICH HAVE BEEN FOUND MOST SUCCESSFUL IN VARIOUS PARTS OF THE DOMINION.

The growers in various parts of the Dominion supplied the following list of Cannas as being those which they have found to be most successful with them. The first six are the most popular in the list: —

King Humbert.
Florence Vaughan.
Alphonse Bouvier.
President Meyer.
Chas. Henderson.
Duke of Marlboro.
Admiral Dewey.
Crimson Bedder.
J. D. Eisele.
Venus.
New York.
Rubin.
Mme. Crozy.
Richard Wallace.
Mont Blanc.
Mrs. Kate Gray.
Pennsylvania.
Buttercup.
Eldorado.
Egandale.

DAHLIAS.

Where the dahlia succeeds it is a very satisfactory flower for the amateur. The dahlia, however, requires plenty of moisture, rich soil, occasional artificial fertilizing, and not too hot a climate. At Ottawa, owing to the hot summers, not more than one year in every four or five proves to be suitable for dahlias.

CULTIVATION.

For amateurs the usual method of growing dahlias is that of root division. The roots of one year are stored in cellars and divided up for new plants the following spring. The storage room for these roots should be frost proof and not too dry. Conditions which are suitable for storing potatoes are suitable for the storing of dahlias. These roots may be planted out into the garden towards the end of May, or earlier if no danger from late frosts is expected. They may be planted from 2 feet to 4 feet apart, according to space available, and the size of the root planted. When dividing the roots care must be taken to see that each part has at least one eye, which will be found on the crown to which the true roots are attached.

Another method, generally the commercial method, of propagating dahlias is by means of cuttings. During recent years raising them from seed has also grown in favour. In fact in the case of the new Collarette dahlias it is the simplest and best method. The seed should be sown about the beginning of April

RECENT POPULARITY AND MODERN TYPES.

The dahlia is much more popular to-day than ever before. It was in great favour some years ago but declined in popularity owing to its somewhat stiff formal appearance. This was especially true of the "Show" dahlias. With the introduction of new types this prejudice against dahlias has somewhat lessened and to-day there is a distinctly revived interest in dahlia growing. The "Cactus," "Decorative," "Paeony-flowered" and lastly the newest "Collarette" dahlias are not known to many people who recall only the older type of show dahlias.

Collarette dahlias and other dahlias when raised from seed form very useful border plants and give blossom late in the year when bloom in the perennial border is rather scarce. It is not necessary to save roots when thus used as seed sown each year gives strong plants and abundance of them.

The named varieties of dahlias run up into the thousands. "Show" dahlias are generally of one colour, "Fancy" of two or more. These two types constitute the older and better-known dahlias.

The "Cactus" first appeared about 1880 and is the most popular type to-day. The "Decorative" or Cactus hybrids possess broad flat rays and are much less stiff in appearance than the show and fancy. "Pompon" dahlias are dwarf forms of the show type but the plants are very prolific and the individual flowers are rather pretty. "Single" dahlias are, as the name implies, single forms of different types of dahlias. The single cactus dahlias are prettier than the ordinary single. A "Quilled" dahlia is midway in type between the show and the decorative or cactus, and the florets are rolled for about two-thirds of their way up. This gives the quilled appearance, hence the name. These quilled generally form a distinct class.

The most recent introduction is the "Collarette" dahlia. The flowers are single with an additional row of short petals or florets around the disk. This presents the appearance of a frill or collar and, as it is usually of a different colour from the remainder of the flower, the total effect is novel and pleasing. The first Collarette dahlia was introduced in 1900, and offered for sale in 1901. This type has been raised from seed and tested at the Farm now for several years and given considerable satisfaction. Seedlings are produced in various colours. They can be procured, however, as named varieties.

The "Pæony-flowered" dahlia is another recent introduction and did not appear in America till 1908. Recently a fragrant form of this type was introduced which promises to become popular.

The dahlia has been grown as a garden flower for about 100 years. Where the summers are suitable the amateur will find few flowers which will respond more readily to care and make such an imposing show. The varieties given below are of some of the older types which have withstood the severe tests of the Ottawa summers and are therefore recommended. New varieties not in these lists should also be grown.

COMPLETE List of Dahlias Tested at Ottawa:—

A. D. Livoni.
American Flag.
Aurata.
Austin Cannell.
Beauty Inconstant.
Bird of Passage.
Bishop of Durham.
Blanche Keith.
Blue Oban.
Bon Ton.
Cactus Queen.
Cannell Gem.
Capstan.
Catharine Duer.
Gabriel.
Gem.
Gilt Edge.
Gloriosa.
Grand Duke Alexis.
Harry Stredwick.
Hector.
Herbert Turner.
Hubert.
Island Queen.
Iridescent.
Jessie McIntosh.
John Cowan.
John Sladden.
Mrs. Gladstone.
Mrs. Leopold Seymour.
Mrs. Peart.
Mrs. Langtry.
Mrs. Wheeler.
Mrs. Winters.
Nemesis.
Oriole.
Paragon.
Pendent.
Perfect Vallon.
Prof. Zacharias.
Prince of Orange.
Prince Imperial.

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COMPLETE List of Dahlias Tested at Ottawa.—*Continued.*

Chairmain.
Clifford W. Bruton.
Cochineal.
Collarette.
Conspicua.
Constance.
Countess of Lonsdale.
Crimson Beauty.
Cuban Giant.
Cycle.
Double Cactus.
Double Claret.
Double Collarette.
Double Giant Paeony-flowered mixed.
Earl of Pembroke.
Empress of India.
Ernest Glasse.
Exquisite.
Eureka.
Evadne.
Fairy Queen.
Fairy Tales.
Fashion.
Fern-leaved Beauty.
Flossie.
Kingfisher.
Kriemhilde.
Kynerith.
Lady Autrobus.
Lady H. Grosvenor.
Lemon Grant.
Little Morris.
Lilliputian.
Lord Hawke.
Louis Hariot.
Lurline.
Lyndhurst.
Mammoth Queen.
Mantas la Villa.
Marguerite.
Marguerite Bruant.
Matchless.
Maurice Riviore.
M. D. Hallock.
Miss Annie Jones.
Miss Finch.
Modest.
Mr. Moore.
Mrs. Clarke.
Mrs. Beedle.
Mrs. Chas. Turner.
Mrs. Dodds.
Queen of Primroses.
Rosenhagen.
Single Collarette.
Single Cream.
Single Exhibition Prize.
Single, Good Magenta.
Single Pink.
Single Red.
Single Selected.
Single White.
Snowclad.
Snowflake.
Standard Bearer.
Sambo.
Susan Ingham.
Sylvia.
Uncertainty.
Victory.
Winsome.
Wm. Agnew.
Wm. Moore.
Wm. Pearce.
Woman in White.
W. T. Abery.

A list of good dahlias from those grown at the Central Farm, Ottawa, during recent years:—

Bon Ton (Show)	Rich reddish crimson.
Clifford W. Bruton (Cactus)	Yellow tinged golden.
Crimson Beauty (Show)	Reddish crimson, fading.
Cuban Giant (Show)	Rich dark claret.
Cactus Queen (Cactus)	Velvety reddish crimson.
Capstan (Cactus)	Bright salmon scarlet.
Countess of Lonsdale (Cactus)	Salmon red tinged carmine.
Evadne (Anemone)	Yellowish, outer petals pink.
Empress of India (Cactus)	Deep, or blood red, or deep maroon.
Ernest Glasse (Cactus)	Rich carmine crimson.
Grand Duke Alexis (Decorative)	White tinged lavender or lilac.
Gabriel (Cactus)	Salmon scarlet.
Hector (Show)	Bright salmon red.
Iridescent (Decorative)	Salmon scarlet on buff tinged carmine.
Kingfisher (Cactus)	Silvery reddish carmine.
Mrs. Beedle (Show)	Buff tinged carmine.
Mrs. Langtry (Show)	Carmine, buff in the interior.
Mrs. Leopold Seymour (Cactus)	Duplex lemon buff and carmine.
Mrs. Winters (Decorative)	Creamy white.
M. D. Hallock (Show)	Golden yellow, lemon yellow centre.
Mrs. Chas. Turner (Cactus)	Lemon yellow.
Miss Anne Jones (Cactus)	Glowing salmon scarlet
Mrs. Peart (Cactus)	White tinged lavender.
Prince Imperial (Cactus)	Deep maroon.
Queen of Primroses (Show)	Primrose.
Sylvia (Decorative)	White centre, outer petals pinkish.

GERANIUMS.

The geranium, or more correctly the "Zonal Geranium" to distinguish it from the Crane's Bill, or the true wild geranium, is essentially a people's flower. It is a bedding plant and a greenhouse plant as well. On account of its remarkable vitality, persistence, and freedom from diseases and pests it is perhaps the best known and most reliable house plant in existence. It is easy to grow, may be propagated readily, and blooms freely. It will stand more abuse than any other flowering plant of like qualities, and is not particular as to soil. Amongst modern geraniums are many of beautiful and pleasing colours. With all these qualities and merits it is likely long to retain its popularity.

Propagation is generally by means of cuttings which root easily when planted in sand or a light type of soil. Cuttings may be taken at any time but about August or in March or April are the two best seasons of the year to get the best success. Seeds may be sown also and plants raised from seed but the colours of such plants will differ from the parent, whereas cuttings will always produce like flowers.

The flower is too well known to require any further remarks. At Ottawa several hundred varieties have been under test for some years. There is a remarkable difference in the value of different varieties. Not more than ten per cent are suitable for bedding purposes. Certain well known varieties have achieved reputation in this connection and these will be found in one of the following lists.

Frequently varieties which do not succeed outside in beds do exceptionally well in the house, while varieties which do well in the beds outside are not the best for house culture. A separate list is given of varieties for house culture.

List of Geraniums grown in recent years at the Central Farm, Ottawa:—

Abbie Schaffer.
Acteon.
A. Dupre.
A. H. Trego.
Alice of Vincennes.
Aldenham.
Alsace-Lorraine.
Alcibiades.
Amaranth.
American Beauty.
Anais Segalais
Arabia.
Arbutus.
A. Ricard.
Ascot.
Athlete.
Attraction.
Aureole.
Banquise.
Baronne Grubissich.
Baron de Layres.
Baron de Scalibert.
Barbara Hope.
Bastien Lepage.
Beatrice.
Beauty.
Beauty of Richmond.
Beaute de Poitevine.
Bellerophon.
Betty Jones.
B. K. Bliss.
Blanchefleur.
Blue Peter.
Bertha de Pressily.
Bonnat.
Bruantii.
Buffalo Bill.
California.
Campania.
Captain Blounet.
Captain Holford.
Captain Jolivet.
Carman Sylva.
Catharine Schmidt.
Cevic.
Ceres.
Chatsworth.
Chas. Curtis.
Chevarri Hermanos.
Champ de Neige.
Charles Larelle.
Charles Rabutot.
Cleopatra.
Clyde.
C. Morel.
Colonel Thomas.
Columbia.
Commandant A. Felker.
Countess of Dudley.
Gloire de Lyonaisse.
Granville.
Great White Queen.
Gripper Banks.
Gustave Emich.
Hardisty.
Helen Keller.
Henriot.
Henry A. Dreer.
Henry Jacoby.
Hermine.
Heteranthe.
H.Greenhill.
His Majesty.
H. M. Stanley.
Hope Dean
Imogene.
Incandescent.
Iris.
Jacquerie.
James Vick.
Jamaique.
Jane O'Ryan.
Jean Dornis.
Jean Viaud.
Jerome.
J. H. Greenhill.
J. J. Harrison.
John Doyle.
John Lemon.
John P. Cleary.
J. Sallier.
Juste Oliver.
Julia Marlowe.
Jupiter.
Keston.
King Victor.
L'Aube.
Lady Brooke.
Lady E. Malet.
Lady Francis Russell.
Lady Renals.
Lady Roberts.
Lady Sarah Wilson.
La Favorite.
Le Cid.
Le Fram.
Le Soleil.
Leon Perrault.
Lilian Duff.
Lord Ilchester.
Lord Kitchener.
Lord Rosebery.
Louis Fages.
L. Swarthling.
Lucania.
Lumineux.
Madame A. Boulaus.
Madame Adrien Corret.
Mme. Landry.
Mme. Mosnay.
Mme. Recamier.
Mme. Thibaut.
Mrs. A. Blanc.
Mrs. Chas. Platts.
Mrs. Chas. Molin.
Mrs. Cordon.
Mrs. D'Ombrain.
Mrs. E. Gladstone.
Mrs. E. Rawson.
Mrs. Geo. Burke.
Mrs. J. M. Garr.
Mrs. Kendall Barnes.
Mrs. Lawrence.
Mrs. N. B. Currie.
Mrs. Wilfrid.
M. Saleroi.
Naples.
Neptune.
New York.
Nicholas 2.
No. 50.
Norah.
Nydia.
Orange Glory.
Oroso.
Pamela.
Paris.
Paul Boudet.
Paul Crampel.
Paul Desjardin.
Pegasa.
Perfection.
Phalene.
Phyllis.
Pierre Courtois.
Pierre Crozy.
Pink Raspail.
President Baillet.
President McKinley.
President Baumann.
President Victor Dubois
Princess Alix.
Prince Bismarck.
Professor Leon Guignard
Professor Peuch.
Puvis de Chavannes.
Queen of the West.
Rainbow.
Raspail Improved.
Red Wing.
Reformator.
Renommée Lyonaise.
Rene Bazin.
Reticulata.
Rev. H. Harris.
Richmond Beauty.
Rival.

List of Geraniums grown in recent years at the Central Farm, Ottawa.—*Continued.*

Countess de Roma.
Countess of Rosebery.
Conan Doyle.
Crabbe.
Crimson King.
Cymric.
Daytonia.
Dazzler.
Delicata.
Divinite.
Dorothy.
Double General Grant.
Double Scarlet.
Dryden.
Dr. A. Vialettes.
Dr. Clenet.
Dr. Dujardin Beaumetz.
Dr. Levavasseur.
Duchess of York.
Dr. Verneiul.
Dublin.
E. Berlot.
E. Dauthenay.
Edmond Blanc.
Edward Douglade.
Empress.
Enchantress.
Ernest Lauth.
Etiole de Vienne.
Exquisite.
Fanny Thorpe.
Fascination.
Firefly.
Fire Dragon.
Firebrand.
Flamingo.
Fleur Blanc.
Fleur de Roze.
Fraicheur.
Fred Bean.
Frogmore.
F. V. Raspail.
Garden Director.
Gettysburg.
Gertrude Pearson.
Gemini.
Gloire de France.
Gloire de Lile.
Madame Bacot.
Madame Bruant.
Madame Castellaine.
Madame Corallic Bajac.
Madame C. Provost.
Madame Debouche.
Madame Jaulin.
Madame Leon Dalloy.
Madame Marmoteck.
Madame Rozain.
Madame Thibaut.
Madame Vaucher.
Madame Victorienne David.
Madonna.
Manteau Rouge.
Mars.
Marguerite de Layres.
Marguerite Pinon.
Mary Beaton.
Mark Twain.
Mary Pelton.
Marquis de Galard.
Marquis de la Costa.
Marvel.
Maurice Thomas.
Maurice Pottecher.
Mauve Queen.
Maxime Kovalevski.
Mazeppa.
M. Chapotin.
M. Conovas.
Mentmore.
Meteor.
Millfield Rival.
Mirador.
Miss Floss.
Miss G. Ashworth.
Miss Hayes.
Miss Willmott.
M. Jarry Desloges.
M. Javol.
Mlle. Meindre.
Mme. Anastasie Lecadrc.
Mlle Ayme de Chevraliere.
Mme. Barney.
Mme. Francois Carnot.
Mme. Halimbourg.
Rodrigue.
Rosemie.
Rosa Bonheur.
Roi Edouard.
Rudyard Kipling.
Russell.
Sam Sloan.
S. A. Nutt.
Saturn.
Salmon Queen.
Scarlet-King of Denmark.
Scevola.
Schone Ulmerir
Sentinel.
Shelley.
Sir E. Cassel.
Sir F. Buxton.
Sir Trevor Lawrence.
Sir T. Hanbury.
Snowdrop.
Snowdrift.
St. Louis.
Surprise.
Tamatav.
Tanagra.
Taurus.
The Countess.
Theta.
The Prince.
Thomas Meehan.
Tour Eiffel.
Triomphe de Nancy.
Umbria.
Venus.
Verge Fleuri.
Vesta.
Vestale.
Ville de Poitiers.
Vincennes.
Virtuose.
W. A. Chalfant.
West Brighton Gem.
White Swan.
Winston Churchill.
Winter Gem.
Wm. Pfitzer.
Wm. Strickland.

GOOD BEDDING GERANIUMS.

Name.	*Description.*
Abbie Schaffer	Double, scarlet.
Athlete	Single, military scarlet.
B. K. Bliss	Double, scarlet.
Bertha de Pressily	Double, bright pink.
Colonel Thomas	“ carmine scarlet.
Edmond Blanc	“ crimson carmine.
Gloire de France	“ silvery rose salmon centre.
Gustave Emich	Semi-double, clear scarlet.
John Doyle	Double, scarlet.
Julia Marlowe	Semi-double, scarlet.
Lady Brooke	Single, white shaded salmon.
La Favorite	Double, white.
Manteau Rouge	Single, scarlet.
Marquis de Galard	Double, salmon scarlet.
Marvel	“ scarlet crimson.
Mme. Landry	Semi-double, deep salmon.
Mme. Mosnay	Single, salmon rose.
Mrs. Lawrence	Double, salmon.
Nydia	Double, creamy white, rosy centre.
Paul Crampel	Single, bright scarlet.
“ Salmon	“ salmon.
Queen of the West	“ “ scarlet.
Red Wing	Double, scarlet.
Sam Sloan	Single, scarlet.
S. A. Nutt	Double, scarlet crimson.

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GOOD GERANIUMS FOR HOUSE CULTURE.

Abbie Schaffer	Double, scarlet.
Amaranth	Cactus type, deep pink and white.
Ascot	Single, deep salmon.
Athlete	" military scarlet.
Barbara Hope	" salmon pink, white eye.
Beauty	" scarlet cerise.
B. K. Bliss	Double, scarlet.
Bertha de Pressily	" bright pink.
Ceres	Single, salmon.
Chatsworth	" orange scarlet.
Champ de Neige	Semi-double, white.
Colonel Thomas	Double, carmine scarlet.
Dublin	Single, rosy magenta.
Edmond Blanc	Double, crimson carmine.
Fanny Thorpe	Single, salmon, deeper centre.
Fire Dragon	Cactus type, fiery crimson.
Fred Bean	Single, rosy cerise.
F. V. Raspail	Semi-double, scarlet.
Gettysburg	Single crimson scarlet.
Gloire de France	Double, silvery rose, salmon centre.
John Doyle	" scarlet.
Julia Marlowe	Semi-double, scarlet.
King Victor	Single, clear cerise.
Lady Francis Russell	" pink white centre.
La Favorite	Double, white.
Lord Kitchener	Semi-double, bright scarlet.
Manteau Rouge	Single, scarlet.
Mark Twain	" white flaked carmine.
Marquis de Galard	Double, salmon scarlet.
Marvel	" scarlet crimson.
Maxime Kovalesvki	Single, bright salmon scarlet.
Mlle. Meindre	Double, salmon pink margined white.
Mlle. Ayme de Chevraliere	Semi-double, white.
Mme. Landry	" deep salmon.
Mrs. Chas. Platts	Single, pink white eye.
Mrs. Cordon	Double, rosy red.
Mrs. D'Ombrain	Single, bright salmon.
Mrs. E. Rawson	" salmon tinged scarlet.
Mrs. Kendall Barnes	" crimson shot with purple.
Mrs. Lawrence	Double, salmon.
Norah	Single, soft pink.
Paul Crampel	" bright scarlet.
Phyllis	" pale salmon rose.
Raspail Improved	Double, scarlet.
Rev. H. Harris	Single, rosy salmon.
Richmond Beauty	" salmon scarlet, white centre.
Sam Sloan	" scarlet.
S. A. Nutt	Double, scarlet crimson.
Scarlet, King of Denmark	" scarlet.
Shelley	Single, deep crimson.
Venus	" large white.
Warrior	Double, cerise scarlet.

Twelve of the most popular geraniums, as grown in various parts of the Dominion:—

Bedding Varieties—

Paul Crampel	Single scarlet.
Jacquerie	" red.
S. A. Nutt	Double red.
Alphonse Ricard	" red.
La Favorite	Single white.
Snowdrop	" white.
Madame Recamier	Double white.
Madame Barney	" pink.
Beaute de Poitevine	Semi-double, salmon rose.

For House Culture—

Mrs. E. G. Hill	Salmon.
Phyllis	Single, pale salmon rose.
Barbara Hope	Salmon pink, white eye.

Paul Crampel, Alphonse Ricard, La Favorite, and Beauté de Poitevine are also recommended for house culture.

OTTAWA.

PLATE XXXIX.

Chrysanthemums in the New Greenhouses, Central Farm, Ottawa, 1915.

Photo by Frank T. Shutt.

PLATE XL.

Cutting beet plant that are in seed, 1915.

Photo by M. B. Davis.

PLATE XLI.

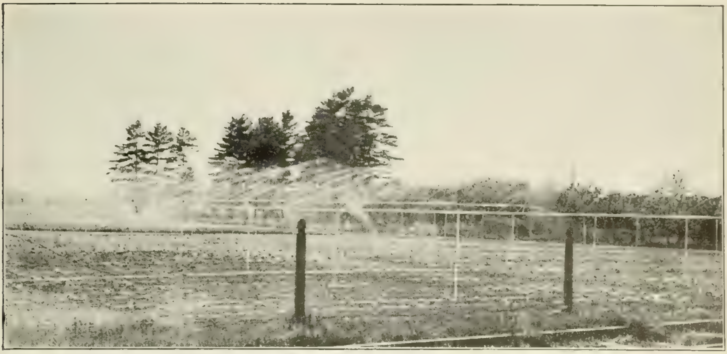


Photo by M. B. Davis.

Skinner irrigation plant at Central Experimental Farm in operation.

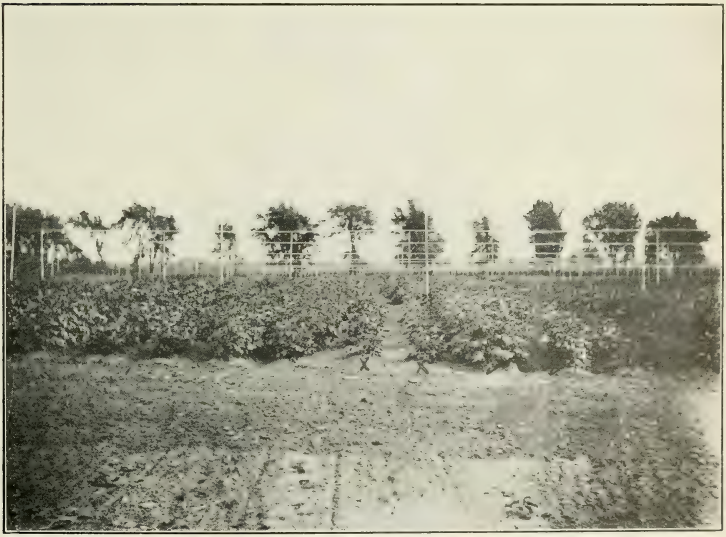


Photo by M. B. Davis.

Showing difference between Fredericton grown seed and Ottawa grown seed of the same strain.
Ottawa seed marked ×. Fredericton seed marked ✓

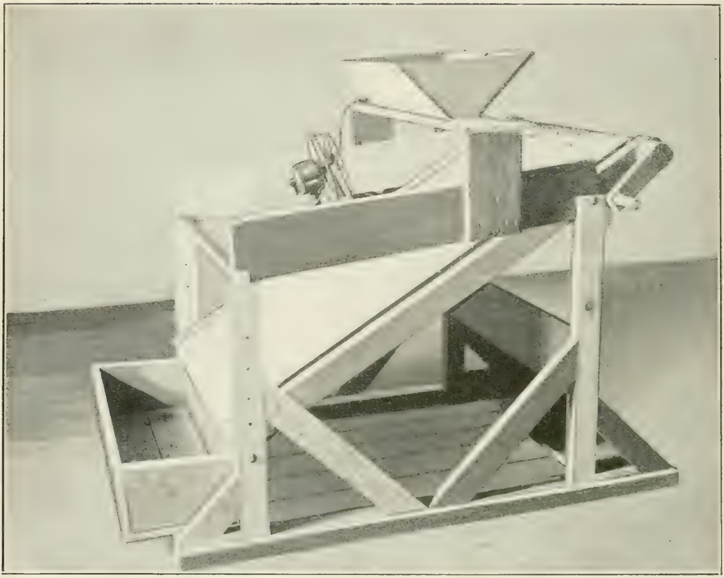


Photo by M. B. Davis.

A home-made seed cleaning machine ; cleans beet, cabbage, turnip, spinach and radish seed.

Plate XLIII.

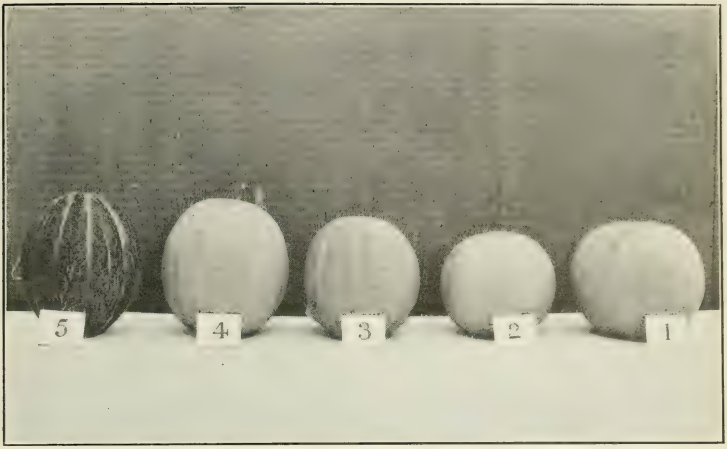
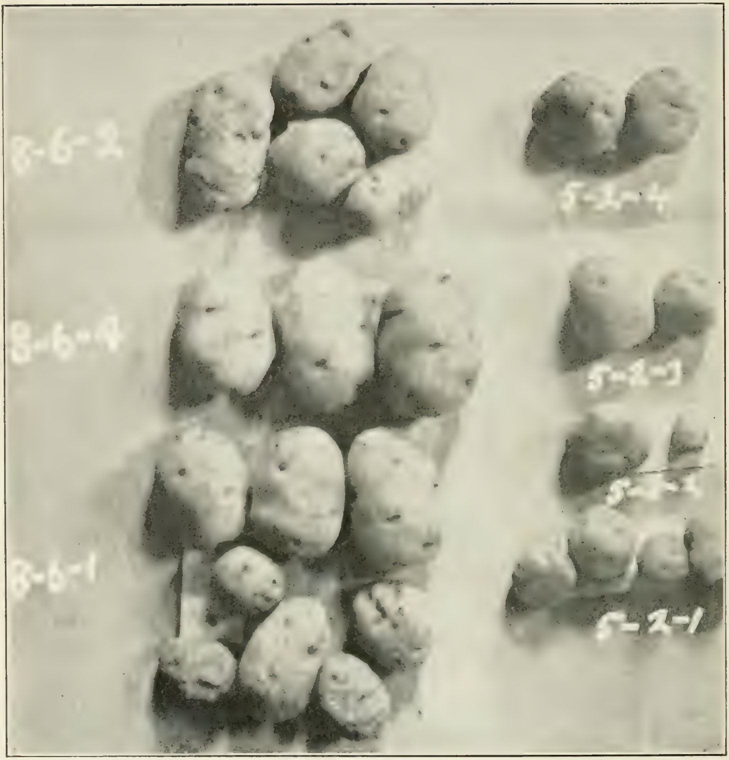


Photo by A. J. Logsdail.

The above photograph illustrates the phenomena of "gradation" so often met with in a number of seedlings of similar origin. The parentage, viz. New Hoodoo▽ crossed with Blenheim Orange△ can be clearly seen in the extreme types. No. 1 resembling Blenheim Orange, No. 5 Hoodoo. Dashes of the dark green skin of No. 5 were to be found appearing through the light silvery green of the more prevalent type. The gradual change in shape from oblate to ovate and the corresponding development of the "netting" from the green type to the oblate silvery green form were clearly noticeable. No gradations were recorded of colour of flesh or flavour, as the dissimilarities were too slight to be able to be recorded accurately.

Cap Rouge, Que. Asters. On the left, commercial seed, on the right, seed grown at Cap Rouge. Grown in Canada should be the motto of the farmer, as made in Canada is the motto of the manufacturer.

PLATE XLIV.



Cap Rouge, Que. Selection of potatoes. Each of the two strains comes from a single tuber. Which lot would you rather plant to get a heavy crop?

Cap Rouge, Que. Young apple tree bent down by ice. It was not badly hurt.

Cap Rouge, Que. Vegetables grown between rows of fruit trees.

Brandon: Winter scenes among the Evergreens. Spruce Hedge, an effective wind break.

Brandon: Winter scenes among the Evergreens.

CHRYSANTHEMUMS.

The chrysanthemum of the greenhouse is *Chrysanthemum hortorum*. It is a large-flowering, autumn-blooming variety of chrysanthemum, and is the product obtained by crossing two wild species from China and Japan. It is a half-hardy plant and in many places completely hardy, and is not, therefore, necessarily a greenhouse plant as it will live over in the perennial border with a little winter protection. As grown in the greenhouse, however, there are many types and these types are separately treated in accordance as experience has shown whether they will best produce small flowers on a bushy plant or large flowers grown to single stems. The large size of greenhouse-grown chrysanthemums, therefore, is due entirely to the special method of handling the plant. In some cases the same variety is grown to a single stem producing one large flower, a plant producing a dozen flowers of medium size, or a bushy plant producing a large number of small flowers.

The sections into which greenhouse-grown chrysanthemums are grouped are given below. The most popular varieties from most of these groups have been tested in the new greenhouses at the Central Farm at Ottawa during the past two years. While the work is not yet advanced enough to give a lengthy article on the chrysanthemum for indoor culture, a list follows in which will be found varieties that have done best during this two year test. The list represents a total of about one-fourth of the number that was tested.

The flowering season of the chrysanthemum commences at Ottawa about the middle of October and lasts until about the end of the year, during which season a good display of chrysanthemums may be seen.

TYPES OF CHRYSANTHEMUMS.

Section 1.—Known as the "Incurved Chrysanthemums." Flowers globular in form and regular in outline.

Section 2.—Known as "Japanese Chrysanthemums". Flowers generally globular in form, but often irregular or flattened. Florets very variable such as flat, fluted, quilled, or tubulated, of varying lengths and in habit incurving, spreading, drooping, or they may be straight and incurved.

Section 3.—Known as "Anemone-flowered Chrysanthemums". They are so called on account of the centre or disk of the flower which is different from the outer or ray florets. The disk florets are generally short and quilled; the ray florets are arranged regularly around the centre disk after the habit of some anemones.

Section 4.—Known as "Pompon Chrysanthemums." Blooms of varying shape, but generally small and always neat and compact. Many flowers to a plant and several flowers to a stem.

Section 5.—Known as "Single Chrysanthemums". Flowers of varying sizes but either entirely single or semi-double with the appearance of a single flower. Flowers are of different types.

Section 6.—Known as Spidery, Plumed and Feathery Types. Flowers small or medium size, with an eccentric shape but light and graceful in character.

Best Chrysanthemums Grown at Ottawa 1914-15:—

——	Name.	Colour and type.	Diameter of flowers in inches, grown one flower to a plant.
Whites	Mrs. G. Drabble	Creamy white, large incurving flowers	5¾
	Naomah	Pure white, Japanese incurved	6⅜
	Timothy Eaton	" fine flowers	6⅝
	Wm. Turner	Snow white, incurved flower	8
	Mrs. Swinburne	Creamy white	6¾
	Ursula Griswold	White, long narrow florets	7
Yellows	Aesthetic	Creamy yellow, twisted incurved florets	6¼
	Chrysolora	Clear yellow	7¾
	Ramapo	Bright yellow	8¼
	Daily Mail	Buttery yellow, narrow, incurved florets, large fld.	8⅜
	James Fraser	Deep canary yellow	7¼
	Odessa	Bright yellow	7⅝
	Onunda	Cream, large flower	7⅞
	Mrs. Beach	Bright yellow	6⅛
	A. S. Baldwin	Clear yellow	6¼
	Mrs. G. Lloyd Wigg	Yellow with buff shading, large flower	7⅜
Pinks	Adonis		7½
	Chieftain	Bright pink, incurved flower	6¼
	Etherington		7⅝
	Elberon	Bright pink, light reverse	6¾
	Meudon	Deep pink, large flower, strong grower	9
	Welis Late Pink	Bright Pink	8⅛
	Valerie Greenham	Pink, large flower	7½
Reds, Browns, and Duplex Types	Glenview	Dark red, dwarf grower (florets)	6½
	O. H. Broomhead	Rose pink to red, reflexed	7½
	E. T. Quittenton	Crimson, reflexed florets	8⅛
	Mrs. H. Turner	Crimson	9
	Gertrude Peers	"	7⅝
	C. H. Totty	Chestnut scarlet	7⅞
		SINGLES.	
Whites	Dorothy Duggan.		
	Anna.		
	Garza.		
Yellows	Kitty Bourne.		
	Mrs. Louis Thompson.		
	Gold Locks.		
	Golden Star.		
Pinks	Ladysmith.		
Reds	Kitty Connell.		
	Jessie Curtis.		

PLANT BREEDING.

(A. J. Logsdail, B.S.A., *Assistant in Charge.*)

Plant breeding can be roughly divided into the two main divisions of that of pure scientific research, and applied or practical scientific work. Pure scientific research can only be carried on by private individuals or institutions especially endowed for such work. Our public institutions must necessarily devote their chief interest to that of applied research, and endeavour to secure practical, and commercially valuable results from the work undertaken, relying for further basic scientific knowledge on those institutions engaged solely in research work

The practical solution of commercial problems is the chief interest of our Experimental Stations and comprises practically the whole of the plant breeding work at the Central Experimental Farm at the present time. One of our problems is the development of superior "home-grown" seed of a number of vegetable crops, the chief of which at the present time are corn, tomato, garden pea, and bean. As the majority of vegetable seeds are produced in more southerly districts, often in states and countries possessing longer summer seasons than generally is the case in Canada, these seeds are not, therefore, particularly suited to the growing of crops in our own Canadian climate. A certain quantity of this home grown seed has been distributed during the past few seasons, but the amount has recently been considerably increased. and, judging by the reports received during the close of 1915 (which refer to seed grown that season) a still greater distribution is being planned for the future.

The vegetable crops at present receiving the most attention are, tomato, sweet corn, and garden pea. With the first two, exceptional earliness is the primary object; with peas, heavy yield, quality, and size are the chief desiderata. Work is also being carried on with fruits and flowers. The work with fruits is necessarily slow, owing to the long period required for maturity with the majority of tree fruits. In small fruits, results may be obtained more rapidly and at the present time some hundreds of bispecie-hybrids of strawberries are giving promise of valuable results.

It has been customary in previous reports of the work in plant breeding to report the work under the three main headings, pomology, vegetable culture, and floriculture, as it has been found to be the most convenient method of reviewing all the activities of the work undertaken in this branch of horticulture.

POMOLOGY.

Breeding new varieties of apples has been a most important feature of this work at the Central Experimental Farm for many years past, and from time to time descriptions of promising new varieties have been made and a distribution of the best of these has been carried on for some time past. The orchards contain several hundred seedlings, now fruiting, and several hundred more have been added each season to the nursery stock, for future planting and experimentation.

The objects in view are, in the first place, to obtain an early bearing, heavy yielding and good keeping apple of first-rate quality, that could be added to the class of the Wealthy and Wagener varieties. Although the Wagener is a valuable apple in many fruit-growing sections it is not hardy enough for the more northerly districts, and hardiness is an essential requisite in any variety of commercial apple for this country. It is, moreover, generally conceded, and was particularly emphasized at the recent Fruit Growers' Convention, that the eastern apple sections have several excellent winter varieties, possessing the characteristics of firmness and good quality, but lacking in sufficient colour to compete favourably on the apple markets of the world with other apple-growing districts, colour having been shown to be an important factor in successful commercial marketing. With this object in view, a number of new crosses have been made with the more highly-coloured varieties of apples, together with the best winter varieties, to produce new types to meet this demand.

The second important line of work in apple breeding is the production of new-specie hybrids of exceptional hardiness that may be grown successfully in the more northerly sections of our central western provinces. The late Dr. William Saunders produced a large number of hybrids resulting from crossing *Pyrus baccata,* a small-fruited Siberian species of exceptional hardiness, with *Pyrus Malus,* the commercial orchard apple.

Many of these hybrids of the first and second generation have proved exceptionally hardy, and further crosses and selections have been made in the past by the Dominion

Horticulturist, Mr. W. T. Macoun, and from these, several very promising types have been secured. This work is being further carried on and enlarged, so that it is hoped ultimately a series of varieties may be produced that can be grown successfully despite severe winter conditions in many of the more northerly areas.

During the past season a number of crosses were made with apple varieties, as follows:—

Record Number:	
18·29	Crusoe, F. X Cobalt, M.
18·31	Crusoe, F. X Duchess of Oldenburg, M.
18·32	Niobe, F. X Crusoe, M.
18·33	Niobe, F. X Wealthy, M.
18·34	Rosalie, F. X Crusoe, M.
18·35	Rosalie, F. X Wealthy, M.
18·36	Wealthy, F. X McIntosh Red, M.
18·37	Wealthy, F. X Duchess of Oldenburg, M.
18·38	McIntosh Red, F. X Crusoe, M.
18·39	McIntosh Red, F. X Wealthy, M.
18·41	McIntosh Red, F. X Cobalt, M.

(N.B.—The letter F. denotes the female parent, or tree upon which the fruit was produced, and M. the male parent, or tree from which the pollen was secured.)

During the past season an effort was made to ascertain to what extent varieties of apples in the orchards at the Central Experimental Farm might be considered self-fertile. With this object in view a number of varieties were pollinated with their own pollen, and the flowers were enclosed in bags. In some instances these flowers were emasculated and then pollinated by hand; in others the flowers were merely enclosed in bags, being periodically shaken, with the object of covering the pistils of these flowers with their own pollen. The following is a table giving the results of this work. Three counts were made of the number of fruits set; the first about three weeks after flowering, the second early in August and the third at the time of harvesting.

SELF-FERTILITY TESTS.

Variety.	No. of Blossoms.	Nature of Pollen.	1st Count.	2nd Count.	Fruit Harvested.
Eve (*P. báccata hybrid*)	53	Dry	0	0	0
Robin (*P. baccata hybrid*)	61	Dry	0	0	0
Haas	121	Fresh	0	0	0
"	94	Dry	0	0	0
"	215	Dry	1·4	1·4	0
"	148	Fresh	1·3	1·3	1
Milwaukee	83	Dry	0	0	0
Wealthy	172	Dry	4·6	2·	0
"	72	Fresh	1·3	0	0
Duchess of Oldenburg	755	Dry	20·6	0	0
"	224	Dry	11·1	0	0
"	764	Fresh	0	0	0
Scott Winter	65	Fresh	29·3	9·6	6
"	38	Dry	29	15·	5
Hibernal	350	Fresh	·8	0	0
Charlamoff	363	Dry	0	0	0
Ostrakoff	380	Fresh	·5	0	0
"	288	Dry	1·	1·	1
Plodovitka	204	Dry	0	0	0
Rochelle	493	Dry	·8	0	0
Rome Beauty	176	Fresh	0	0	0
Lowland Raspberry	131	Dry	20·6	1·5	0
"	44	Fresh	17·5	0	0
Martha Crab	101	"	0	0	0
Anisim	98	Dry	0	0	0
Glenton	158	Fresh	6·	1·	0
Bingo	55	"	0	0	0
Salome Seedling R. 20–T. 40	320	"	0	0	0
Salome Seedling, R. 22–T. 49	259	"	1·	1·	1
McIntosh Red	146	"	0	0	0
Gano	318	"	0	0	0
Gideon	981	"	·3	0	0
Lawver Seedling R. 19–T. 44	478	"	0	0	0
Cobalt	312	"	0	0	0
Yellow Transparent	605	"	3·9	·9	1
Langford Beauty	299	"	0	0	0
Grandmother	442	Dry	0	0	0
"	227	Fresh	·4	0	0
Antonovka	313	"	8·9	0	0

A number of the varieties employed in the self-fertility tests were also crossed with the pollen of other varieties to test and check the comparative accuracy of the work as far as possible. The following table gives a summary of these results:—

CROSS FERTILITY TESTS.

Variety.	Number of Blossoms.	Pollen Parent.	Pollen.	1st Count.	Fruit harvested.
Eve (*P. baccata hybrid*).....	40	Charlamoff............	Fresh.......	4	4
Eve (*P. baccata hybrid*)....	23	Wealthy...............	Dry........		20
Robin (*P. baccata hybrid*)	44	Wealthy...............	Fresh......		76
Haas....................	102	Wealthy...............	Dry........	15	10
Milwaukee..................	139	Haas..................	"	25	18
Milwaukee..................	110	Yellow Transparent.....	"	13	0
Milwaukee..................	55	Duchess of Oldenburg...	"	23	3
Wealthy..................	62	McIntosh.............	"	24	4
Wealthy..................	179	Duchess of Oldenburg...	"	41	10
Duchess of Oldenburg......	246	Hibernal..............	Dry and poor......	20·3	7
"	190	Haas..................	Dry........	46·3	19
Scott Winter...............	52	Haas..................	"	30·77	12
Scott Winter...............	19	McIntosh Red..........	"	47·3	6
Hibernal....................	148	Antonovka.............	Dry and poor......	0	0
Hibernal....................	114	Charlamoff............	Dry and poor......	0	0
Charlamoff................	115	Yellow Transparent....	Dry........	18·5	6·2
Plodovitka................	89	Charlamoff............	"	3·4	2·6
Rochelle..................	71	Rome Beauty..........	"	16·3	6·5
Yellow Transparent.........	235	Antonovka.............	"	4·2	4
"	161	Charlamoff............	"	21·9	2·4
Antonovka................	197	Yellow Transparent....	"	31·9	4·5

The percentage of fruit set was quite low, owing to a number of causes. The help available for this work was not as experienced as it might have been, but from check results the records may be taken as substantially correct, though there may be an instance or two where errors have crept in. The result of the whole work shows that apple varieties in general are self-sterile under most conditions, that is, the results obtained at the Central Experimental Farm are in accord with the results previously obtained at several experiment stations and go to prove the necessity of planting several varieties of apples in an orchard, to act as suitable pollenizers for each other.

Another factor that became apparent in this work was that a large number of the flowers, which originally appeared to have been fertilized and to have set fruit, dropped off at later periods during the season.

The total yield in the orchards was little more than a half crop and conditions for pollination by hand were not at all satisfactory. Nevertheless, despite these drawbacks, the results obtained, as shown in the two previous tables, are markedly different.

PEARS.

The work with pears during the past year has consisted in making further crosses between the varieties of Russian origin, now growing in the orchards at the Central Experimental Farm, and commercial varieties of pears from the more southerly districts. The Russian varieties are hardy and blight-resistant, but otherwise much inferior to the average commercial pear. Pear growing in this country is so severely handicapped by a Pear Blight that the object of this work is to secure, if possible, new varieties as resistant to Pear Blight, as are those of Russian origin, and possessing at the same time the edible qualities of the commercial pear. The seedlings resulting from last year's work germinated very satisfactorily and are now growing in the seed beds.

GRAPES.

A large number of young grape seedlings have been growing at the Experimental Farm, but, owing to the very limited space available for growing these, the majority of them were sent to the new Experimental Farm at Lennoxville, Quebec, where sufficient room for their full development could be obtained and where correct records might be secured of their hardiness.

The seedlings were produced from seed of the following varieties of pure Labruscan origin namely, Moore Early, Concord, Worden, Vergennes and Champion and from varieties of hybrid composition, having as their parentage Labrusca and Vinifera origin, such as Campbell Early, Brighton, Niagara, Salem and Daisy.

During the past season the young seedlings have grown satisfactorily. The seedlings from some parents have shown a markedly greater vigour than those from other stock.

GOOSEBERRIES.

During the past few years a number of gooseberry seedlings have been grown. these seedlings resulting from former crosses between *Ribes Cynosbati* and *Ribes oxyacanthoides* with *Ribes Grossularia.* These seedlings are three years old and the majority of them fruited during the past season; amongst them were one or two plants that were considered of sufficient value for further trial and breeding work, but a large majority of them were similar to the wild parent types in fruit characters.

STRAWBERRIES.

During the season of 1914 a number of crosses were made between several of our most satisfactory commercial varieties and several of our more common native species, a collection of native species having been made the season before and characteristic types isolated. From these crosses a good deal of seed was obtained and immediately sown in a seed bed. Young plants soon began to appear and as their size permitted, they were pricked off and then potted and grown throughout the entire winter, and were large enough for field planting in the spring of 1915. Some hundreds of these varieties are now being grown in the field in the hill system. A few of them have flowered during the season of 1915 and give promise of producing valuable results. All of this plantation should fruit during the summer of 1916. A large number are also being grown under glass for future breeding work.

The object in view is to secure, if possible, new series of strawberry varieties, possessing vigour, hardiness and heavy bearing qualities together with the sweetness and flavour so well known in the small wild species.

VEGETABLE BREEDING.

TOMATOES

During the past few years an effort has been made to isolate and establish a variety of tomato that would mature a large proportion of its crop in the first four weeks from the commencement of the tomato season. It had been found by experiment that many of our early varieties of tomatoes came into bearing very gradually and often produced no more than five or six per cent of their total crop during the first four weeks of fruiting from the time of picking the first ripe fruit. A strain that has been named Alacrity has shown a marked tendency to the production of a large proportion of its crop early in the fruiting season. During the summer of 1915 the best strains that had previously been selected from those varieties were tested in plots of 100 plants to each. The following table gives a brief summary of the results of this work:—

Record No.	Variety.	Percentage Yield of 1st two weeks.	Percentage Yield of 2nd two weeks.	Average Yield per plant.	
		lb.	lb.	lb.	oz.
23·111	Earliest on Earth	8·2	91·8	8	4
23·121	Alacrity	15·8	84·2	10	7
23·131	“	7·5	92·5	9	7
23·141	“	6·9	93	9	6
23·151	“	13·3	86·7	9	5
23·161	Chalk Early Jewel	5·2	94·8	9	
23·231	Alacrity	10 7	89·3	10	3
23·241	“	8·2	91·8	10	2
23·251	“	11·9	88·1	9	2

It will be seen from the above results that the strains of Alacrity have matured a greater proportion of their crop in the first two weeks than either of the other early varieties under trial, and though a record was only kept of the yield for the first four weeks, it will be seen that up to the end of this time the Alacrity strains yielded considerably more per plant than the early selections of the other two recorded strains. Plants of the four best strains of Alacrity were grown separately and a careful record kept of the yield of each individual plant of these strains. It was found amongst the plants chosen for this individual plant selection, that there were some that showed a very marked tendency to produce a large, early crop, some individual plants yielding as much as 17 pounds 7 ounces in the first four weeks of fruiting.

In order that an idea may be obtained of the methods employed in this individual plant selection work, a table is given, containing the results of the individual plant yields from one of the six strains grown during the past season, and the plants selected from these strains for future breeding work are given:—

Plant No.	Yield from Aug. 11th to Aug. 24th.		Total Crop for one month.		No. of Fruits.	No. of unmarketable fruits.	Average weight of fruits.
	lb.	oz.	lb.	oz.			oz.
1	1	7	5	1	21	2	4·0
2		13	8	6	31	2	4·3
3	2	8	13	13	46	1	4·8
4	3	3	9	12	31	1	5·0
5	4	10	12	9	39	2	5·1
6	1	3	7	9	27	1	4·4
7	4	3	12	12	42	4	4·8
8	4	15	11	13	35	3	5·4
*9	6	9	17	1	47	0	5·8
10	4	10	14		49	6	4·5
11	3	5	12	7	34	0	6·6
12	3	4	9	13	31	0	5·0
*13	6	12	17	7	50	1	5·5
14	5	9	9	8	28	1	5·4
*15	7	7	11	12	38	3	4·9
16	5	7	10		36	1	4·4
17	4	4	11	1	38	1	4·6
18	4	11	14	6	46	3	5·0
19	2	10	7	12	27	4	4·5
*20	4	10	14	13	45	0	5·2
21	5	3	11	3	37	5	4·8
22	3	6	8	5	29	4	4·5
23	2	8	9	8	32	0	4·7
*24	7	2	16	5	47	0	5·5
*25	6	14	14	15	41	2	5·7
26	3	13	10	3	30	1	5·4

In the above table the following numbers have been selected as plants most desirable for future breeding work, namely, No. 13, No. 9, No. 24, No. 20, No. 15, and No. 25. It will be seen that there are several plants in the above table that give a better yield than plant No. 15, but it was chosen on account of the large proportion of fruit matured in the earliest part of the season, namely, 7 pounds 7 ounces of marketable fruit was picked before August 24. Similar work was carried on with the other strains and plants have been selected from these. By this means it is hoped ultimately to secure a very early yielding strain of tomato.

A quantity of seed amounting to about 15 pounds has been secured from our own plants this season. This seed has been distributed to experimenters throughout the country for trial, and a large proportion of the reports, so far received, speak very favourably of this new strain.

SWEET CORN.

During the past season seed of corn crosses made during the summers of 1914 and 1913 were tested and isolation and selection employed in an endeavour to secure particular types of an early bearing sweet corn of good quality. The earliest bearing sweet corn now grown at the Central Farm has proved to be Early Malcolm, an extraction from Early Malakoff, a sweet corn of Russian origin. A number of crosses were made between Early Malcolm and White Early Adams (a Dent corn), and White Squaw (an aboriginal, flint corn, dwarf in habit, but extremely vigorous and early bearing). From these crosses a number of new types have been obtained and it is hoped that some of considerable commercial value may be isolated and established from this selection of hybrids.

The following table gives the comparative characteristics of these hybrids; with regard to this table a few explanatory notes will be of assistance to those interested in corn breeding and corn selection.

The term "nubbin" refers to unmarketable ears of five inches in length and under.

The "Ear Row Ratio" denotes the number of ears of eight rows of kernels, ten rows, twelve rows, fourteen rows, or sixteen rows of kernels, harvested in a given row of 100 feet in length of each strain.

The column under the heading of "Ear Length" gives three numbers to each strain, the first denoting the number of ears over seven inches in length from kernel to kernel, the second seven to six, the third six to five.

OTTAWA.

—	Origin.	Nature of Crop.	No. of Ears.	Wt. of Ears.	No. of Nubbins.	Wt. of Nubbins.	Total Crop.	Ear Row Ratio Rowed Rowed Rowed Rowed Rowed 8—10—12—14—16	Ear Length. Ear 5—6"	 Ear 6—7"	 Ear 7" and over
2571	Early Adams X Early Malcolm	All wrinkled Sweet.......	60	368 oz.	52	112 oz.	480 oz.	5— 8—29— 6— 0	37	11	0
2572	" "	" "	65	375 "	38	106 "	481 "	6—17—35— 4— 0	49	17	1
2573	" "	" "	59	368 "	41	104 "	472 "	9—15—34— 1— 0	37	20	2
2575	" "	" "	53	366 "	45	104 "	470 "	3— 5— 29— 4— 1	30	12	0
2577	" "	" "	56	368 "	42	101 "	469 "	2— 5—29— 5— 0	31-	9	1
2579	" "	" "	92	460 "	27	64 "	524 "	21—27—30— 2— 0	47	33	0
2574	" "	Wrinkled 82%. Dent, 18%	68	499 "	23	52 "	551 "	4— 4—31—10— 3	16	32	4
2576	" "	Wrinkled 20%. Dent, 80%	52	384 "	25	85 "	469 "	4— 7—34— 7— 2	24	26	4
2578	" "	Dent, Flint & wrinkled....	54	384 "	22	55 "	439 "	9—11—37— 9— 0	34	31	3
2580	" "	Dented and wrinkled......	68	344 "	19	48 "	392 "				
2581	White Squaw X Early Malcolm	All wrinkled. Sweet.......	115	343 "	48	89 "	432 "	....	34	19	2
2585	" "	" "	62	308 "	32	58 "	366 "	34— 6— 7— 0— 0	31	16	0
2587	" "	" "	52	254 "	60	100 "	354 "	48— 3— 1— 0— 0	45	7	0
2589	" "	" "	44	240 "	51	95 "	335 "	33— 7— 4— 0— 0	34	10	0
2582	" "	Flint, 76%. Wrinkled 24%	66	348 "	29	62 "	410 "	52— 8— 6— 0— 0	20	37	9

GARDEN PEA.

A considerable amount of work has been devoted to the improvement of many of our best known varieties of garden pea. The method employed has been that of rigid selection and then isolation of the desirable types. It has been found that a marked improvement has been obtained from the stock originally chosen to work with. Each season some of the original stock, upon which no selection work has been attempted, is grown as a check beside the new strains.

The season of 1913 was not a satisfactory pea season; 1914 proved to be an exceptionally good year, and the early part of 1915 was all that could be desired for the growing of a pea crop, but the heavy rains towards the end of the season greatly retarded the maturity of the crop, and a considerable quantity of seed was lost by shelling out. Attempts were made to reduce this loss to a minimum but, nevertheless, the ultimate results were undoubtedly affected by these conditions.

The following table shows the comparative yields for a number of strains of several varieties for the past three years. In each instance the amount of seed sown was the same, the cultural and soil conditions as nearly identical as it was possible to make them, and yet it will be noted that though the season of 1915 was not a satisfactory season for a pea crop, the average yields are considerably higher than those of 1913, though somewhat below those of the previous year 1914.

Record No.	Variety.	Yield 1913.	Yield 1914.	Yield 1915.
		oz.	oz.	oz.
311	English Wonder	19·7	69	60
312	"	19·7	69	45
321	"	20·2	71	56
322	"	20·2	71	60
331	"	18	74	60
341	"	19·1	80	65
342	"	19·1	80	50
351	"	19·1	78	61
352	"	19·1	78	65
353	"	19·1	78	70
354	"	19·1	78	70
361	"	6·6	81	66
362	"	6·6	81·5	68
363	"	6·2	81·5	70
364	"	6·1	81·5	63
371	American Wonder	18·4	70	71
372	"	18·4	70	65
373	"	18·4	70	71
374	"	18·4	70	60
375	"	18·4	70	72
376	"	18·4	70	62
381	"	18·4	59	73
411	McLean Advancer	22	88	60
421	"	22	75	56
422	"	22	75	72
423	"	22	75	78
424	"	22	75	67
425	"	22	75	78
431	"	17·5	59	64
432	"	17·5	59	62
441	Stratagem	17·6	63	67
442	"	17	58	76
443	"	17	51	69
444	"	17	49	67
445	"	17	44	65
446	"	17	55	77
447	"	17	55	74

OTTAWA.

It will be noted in the above table that Stratagem, the latest maturing variety of those mentioned, shows a considerable increase in crop over that of either of the two preceding seasons. It is interesting to note that during the extremely wet weather experienced last summer, the injury to the pea crops was more particularly done to those varieties that were nearing maturity at that time. The Stratagem was comparatively uninjured. It, therefore, seems reasonable to suppose that the lighter yields of the other varieties during 1915, as compared to 1914 were, in no small measure, due to climatic conditions.

BEANS.

A certain amount of selection has been done in seasons past with beans, but the crop proved a total failure, owing to Bean Anthracnose (*Colletotrichum lindenmuthianum*). The setback has emphasized the importance of the fact that the most urgent work with beans, now needing attention, must be that of developing rust-proof varieties. With this object in view, a number of individual plants were chosen from varieties that showed a decided ability to withstand the ravages of this disease.

There is a large field ot work requiring urgent attention: such crops as potatoes, onion, and cabbage offer many possibilities of improvement. Perhaps the most important of these mentioned is potatoes, but little can be done in this line of work at Ottawa, as it has been found by past experience that the climate, or length of season, is not suitable to the continued growing of any strain of potato from its own seed; such a policy has shown that varieties, in this district, lose vitality and vigour and become particularly susceptible to the diseases most commonly found attacking the potato.

FLORICULTURE.

Aquilegia.—In the spring of 1915, further selections were made of the best types of Aquilegia with a view of securing those of perennial rather than biennial habit. A number of crosses were made by hand of the most desirable types, and when the seed matured some six weeks later it was immediately sown, and a good germination of young plants was secured. The Aquilegia, as has been pointed out before, is so eminently suitable for a national flower that efforts are being made to popularize it. It is perennial in habit, and vigorous in growth under a great variety of conditions. There are several native species or sub-species and it is certainly one of the most beautiful spring and early summer flowers that are to be found in garden or woodland, the flowers being graceful in form and ranging in shades from deep rose-red through shades of orange and pink to a deep violet blue. The only colour not yet secured amongst the new strains is that of a bright crimson, but there is, perhaps, no plant that can be grown so easily and, at the same time will respond so readily to careful treatment.

Considerable work has been done with Aquilegia under glass. A number of the most promising seedlings have been grown in pots during the latter part of the summer of 1915. These were saved for forcing under glass and have produced during the month of March a very satisfactory display of flowers, amongst which have been isolated some notably beautiful plants of the "stellata" type. Further crosses have been made with this type with the hope of securing shades of colour amongst them that have not so far appeared.

Roses.—During the summer of 1914 several attempts were made in crossing roses, to secure new types of hardy hybrids, but climatic conditions were unfavourable and seed was scantily produced from the crosses made. Nevertheless a few germinated and grew successfully during the past season, and are now receiving care with other stock in the nursery rows.

During 1915 a number of further crosses were made, and a certain amount of seed secured from them, the object being to secure, if possible, new types of the very attractive and hardy *Rosa rugosa* hybrids, the well-known Japanese or Chinese bush rose.

Geraniums.—A certain amount of crossing has been done with geraniums, and several seedlings have been secured that are considered of sufficient merit to name and propagate. The types of geranium chosen for this work are the large singles introduced within the last few years, such as Dublin, Shelley, and Chatsworth.

During the past season a number of seedling geraniums, the results of previous hand pollination between chosen varieties, have been grown. About one hundred of these have flowered, many of which have proved very promising, the three best having been named.

No. 3,177, a cross between Dublin, F. and Chatsworth, M., has been named "Verdun". It is a single, large-flowered variety of a bright, crimson colour, the long and strong flower stalk surmounted by a large cluster of flowers; a vigorous grower, free flowering and the leaves are marked with a slight zonal.

No. 3,106, a cross between Dublin, F. and Chatsworth, M., has been named "Sir Douglas Haig." In colour it is of a rich carmine red, has a large, single flower and the flower stalks are tall and strong, producing a large flower cluster. The foliage shows a slight zonal.

No. 3,173, also a cross of Dublin, F. and Chatsworth, M., has been named "Elspeth" and is a large, single, salmon pink, borne on a strong and tall flower stalk. The plant is a vigorous grower, foliage marked by a clear zonal and has proved to be free flowering.

These new varieties are being propagated together with some of the best of those that have not yet been considered worthy of name, and from these a number of new seedlings are now being grown, the result of intercrossing between the promising strains now secured. It is hoped to flower the majority of these during the coming summer, and further promising types are looked for with confidence.

Petunias.—An interesting line of work has been undertaken with petunias, the economic object of the work being to secure new garden varieties of merit, but other objects of interest soon began to manifest themselves. Parent varieties for this work were the free-flowering, single, white, possessing yellow pollen; a free flowering, small single, deep maroon, with steel-blue pollen; and a large double, white, yielding little pollen, but what there was consisted of a creamy white colour. Reciprocal crosses were made between these parents and a large number of the F1 plants were grown and flowered in the field during 1915. The majority of these seedlings in general plant character appeared to resemble the female parent. In colour of corolla no definite tendency towards either parent could be determined, as a great majority of plants produced an ugly reddish-blue corolla in no way resembling either parent,, though plants possessing white flowers were more numerous than those possessing the deep maroon.

The chief point of interest was to be observed in the behaviour of the pollen of these seedlings. The yellow pollen crossed with the steel-blue or the steel-blue crossed with the yellow gave in each instance, several, though not a large proportion of plants, yielding distinctly green pollen. The appearance of the crossed pollen did not necessarily coincide with the blending of the corolla colours, that, is, the green pollen was not necessarily associated with the bluish-red corolla, and in these first generation seedlings the appearance of white, bluish-red or deep maroon corolla seemed to be inherited quite independently of the appearance of a yellow, green, or steel-blue pollen. Instances were found of all the combinations, except white corolla with green pollen, and even this might have been found, had the numbers grown been greater.

This work is being carried on, several types discovered being selfed and several crosses have been made between these types, with the object of determining, if possible, any facts relating to the problem in hand.

Ottawa.

SEED DISTRIBUTION.

In the plant-breeding work there is necessarily produced a quantity of seed of first-class quality, for which there is no room for sowing, owing to the limited area available for this work. It was, therefore, considered advisable to distribute this seed to individuals who might be interested and desirous of trying any new products that were being put out. The seed sent out has been very favourably received and, as a consequence, demands for samples have considerably increased in number.

Two of the most important varieties of seed sent out have been an early table corn, known as Early Malcolm, and an exceptionally early-cropping tomato named Alacrity. These varieties have been so favourably received that a number of the largest Canadian seed houses are now cataloguing them for sale under very favourable comments. Dupuy & Ferguson, seedsmen, Jacques Cartier Square, Montreal, describe the Early Malcolm as "A distinct and valuable addition to the earliest sweet corns. It is very sweet, juicy and tender. It is extremely early and is ready to use from six to ten days sooner than an other sweet corn grown, and is larger than any of the earliest or medium early varieties. Early Malcolm sweet corn is especially adapted for planting in our northern latitudes." The McKenzie Company, seedsmen, of Brandon, Manitoba, offer Early Malcolm as a new novelty, its chief recommendation being its extreme earliness. The Normal School, Brandon, reports it as " ten days earlier than any other variety tested by them."

The Alacrity tomato is equally favourably commented upon by these firms, the McKenzie Company advertising it as " A genuine Canadian introduction," and emphasizes its chief points as earliness, productiveness and quality, whereas Dupuy & Ferguson advertise it as " the earliest red tomato, ten days earlier than any other strain." The prices asked for the seed are a flattering criterion of its estimated worth, the noted strain of tomato known as Langdon's Northern Adirondack being quoted at 80 cents an ounce and that of Alacrity at $1.50.

The following is a tabulated record of the results from reports received from experimenters throughout the Dominion, who have grown, during the past year, seed distributed by the Horticultural Division of the Central Experimental Farm.

SUMMARY OF REPORTS FROM SEED EXPERIMENTERS.

EARLY MALCOLM SWEET CORN.

Province.	Favourable.	Not favourable.	Drought	Frost.	Accident.	Total.
Prince Edward Island	10	5	0	0	0	15
Nova Scotia	6	1	0	1	0	8
Quebec	65	11	7	3	0	86
Ontario	38	7	0	4	0	49
Manitoba	7	2	0	13	0	22
Alberta	12	4	0	5	3	24
Saskatchewan	16	1	0	21	0	38
British Columbia	29	3	0	6	2	40
Total						282

ALACRITY TOMATO.

Province.	Favourable.	Not favourable.	Drought	Frost.	Accident.	Total.
Prince Edward Island and New Brunswick	12	3	0	0	0	15
Nova Scotia	6	1	0	0	1	8
Quebec	74	6	4	2	2	88
Ontario	28	9	2	4	1	44
Manitoba	9	1	0	12	0	22
Saskatchewan	17	0	0	14	2	33
Alberta	21	1	0	3	1	26
British Columbia	32	4	0	3	1	40
Total						276

Breeding is, at this time, the most important field of work at all large centres of agricultural education and research. The stock-man realized the significance of careful breeding, before it began seriously to be considered in other branches of agriculture, but recent energy has tended to emphasise its importance to all branches.

Plant breeding in the field of horticulture has developed very rapidly within the past decade, and to-day, it comprises in many institutions, the basis of their existence. The recent and very rapid development of this phase of horticulture is the natural sequence arising from the expansion and differentiation of scientific agricultural research.

Applied entomology now deals with many problems formerly within the field of the horticulturist, the agricultural chemist is similarly engaged in bringing to bear an expert knowledge on problems with relation to soil and nutrition. Variety testing is narrowing down as the result of the work of past years, and the consequent elimination of many so-called varieties. Yet, despite all this, there is not a variety that can be considered perfect or even nearly perfect, for any crop grown, (that is, judging merely from the qualities now in existence and evident in almost any collection of varieties). The essential object of plant breeding, therefore, is to collect and combine these scattered characteristics and qualities, and secure, if possible, combinations of them more suitable to commercial purposes.

This closes the report of the work in Plant Breeding at the Central Experimental Farm for the year 1915, but in conclusion it might be pointed out that the basic object of this work is to improve stock of existing varieties and secure, if possible, improved new varieties. At a time like this, this work is of special importance in the field of seed production, but owing to the limited space now available, expansion along the present urgently called for work of seed production is necessarily limited, and it is hoped that in the near future the production of varieties of improved seed in considerable quantity may become one of the main objects, if not the chief one, of this field of work.

OTTAWA.

EXPERIMENTAL STATION FOR PRINCE EDWARD ISLAND, CHARLOTTETOWN.

REPORT OF THE SUPERINTENDENT, J. A. CLARK, B.S.A.

This is the seventh annual report on the horticultural work at this Station since its inception in 1909. The work accomplished would indicate that this province is admirably situated for the production of small fruits and garden vegetables. The backward spring holds back bloom generally until danger from frost is over. The moist, moderate temperatures are ideal for large crops of first quality fruit and the long open autumn gives the slow growing vegetables an opportunity to mature. After a careful study of results obtained from the many tests of varieties it was decided to reduce the number of variety tests by cutting out unsatisfactory varieties and to start a series of cultural tests with many of the leading vegetables in order to determine the best methods of cultivation and care of the several vegetables and tubers.

SEASONAL NOTES.

The winter of 1914-15 was unseasonably mild, the frost coming out of the ground entirely in both January and February. Two cold waves occurred, one at Christmas and one at the beginning of February, but they lasted only a few days. Heavy falls of snow occurred in March and gave splendid protection to the fruits, shrubs and perennials. Very little rain fell in April but May was so wet and cold that growth was slow, while large bodies of ice along the shores kept the air cool and raw. The hotbeds were sown April 15, sweet peas were sown outside April 23, and hardy vegetables were sown May 18. The trees did not appear green until May 27, but no June frost occurred, and the months of June and July were ideal, all plants making wonderfully rapid growth during this period. Beneficial showers occurred from June 9 to 25. A heavy gale did much damage in some places on July 9, destroying the foliage on exposed trees and killing, outright, several acres of strawberries along an exposed shore just as the crop was ripening. The fruit did not set well on the larger trees, probably due to a continued dull wet spell of weather that occurred while the trees were in bloom. August was seasonable, and September was very dry and the potatoes and vegetables suffered somewhat from drought. October and November were fine. December was very open, ploughing continuing to the 27th of the month. January and the first half of February were mild, with fair sleighing, but the last half of February and March were very blustery and stormy. Sixty-six inches of snow fell during March alone.

Some Weather Observations taken at Charlottetown Experimental Station, 1915.

Month.	Temperature F.			Precipitation.				Total Sunshine.
	Max.	Min.	Mean.	Rainfall.	Snowfall.	Total.	Heaviest in 24 hrs.	
	°	°	°	Inches.	Inches.	Inches.	Inches.	Hours.
January	48	14	21·58	2·62	27	5·32	1·05	72·4
February	49	13	22·624	1·54	8	2·34	·58	94·6
March	45	10	25·774	....	23·5	2·35	·5	86·4
April	57	20	37·55	1·80	7·	2·5	·4	140·9
May	68	31	44·742	3·97	....	3·97	1·09	160·1
June	77	35	54·767	3·13	....	3·13	·79	195·5
July	81	42	63·645	1·95	....	1·95	·7	238·9
August	81	42	63·645	2·22	....	2·22	·62	203·3
September	80	35	57·233	3·98	....	3·98	·9	169·9
October	67	31	47·667	3·83	....	3·83	1·66	145·1
November	54	21	38·48	4·51	....	4·51	1·19	58·6
December	50	11	29·71	6·04	13·1	7·35	1·77	48·1
Total for year				35·59	78·6	43·45	....	1613·8
Average for seven years				32·73	101·81	42·87	....	1865·5
Total for six growing months, April to September				17·05	7·	17·75	....	1108·6
Average for six years, for six growing months, April to September				17·71	11·25	18·83	....	1269·8

HORTICULTURAL AREA.

The land and grounds devoted to horticulture including wood lots and avenues, is about 24 acres. Further time was spent in fixing up these wood lots and shelter belts so that the white birches should have the prominence they deserve, as some of our most beautiful trees.

LARGE FRUITS.

APPLES.

The following varieties set out in 1910 began bearing fruit in 1915: Ontario, Northwestern Greening, Ribston Pippin, Langford Beauty and the Hyslop crab tree. The trees were sprayed while dormant, just as the buds showed signs of breaking, and twice with the summer-strength lime-sulphur spray. A power sprayer was used and insects and fungous diseases controlled. A medium crop of clean fruit was harvested from the old orchard. The fruit on the Red Astrachan made very poor growth and never acquired its usual flavor. The growth of the new apple orchard has been slow, probably due to the heavy clay hard pan that underlies that section of the orchard.

CHERRIES.

The cherries were more than a week later in blooming in 1915 than in 1913, when they were three or four days earlier than in 1914. The trees have made a splendid growth and bloomed fairly well. Almost every tree bore some fruit and a number bore a fair amount, but the birds took it before it matured. The trees have remained free from fungous diseases except a few cases of crotch canker.

PLUMS.

This year (1915) proved to be an off-year with plums at this Station. The trees bloomed fairly well but did not set. Smith Orleans and Purple Egg were the only two that bore anything worth while.

PEARS.

The pear orchard has made much more rapid growth than the other fruit trees set out in 1910. The trees were sprayed and made good growth in 1915, but did not produce any fruit.

As it was desirable to use the land where the pear orchard stood for other purposes, the entire orchard was moved late in December to a new location on the Johnson property north-east of the Experimental Station buildings. The ground was laid off early in December and the holes for the trees dug large and two feet deep. A trench was dug about the trees some eighteen to twenty inches from the trunk and, as the ground froze, the trench was deepened until the ball of earth was frozen solid and contained most of the roots of the tree. A drag sleigh was used and four trees were removed at a time. During a mild spell of weather afterwards the clay was packed about the frozen ball so as to prevent drying out in the spring.

SMALL FRUITS.

GRAPES.

The late season and the leaving of the earth over the grape vines late in the season so retarded the grapes that only a few bunches of Winchell and Moyer matured so that they could be used. The yield of all varieties was very light.

CURRANTS.

The crop of black currants was very little better than the previous year. It was found that the currant stem borer was responsible for much of the injury. The red and white currants gave large yields of excellent fruit. The green aphis that has been troublesome other years was controlled by the use of "Black Leaf 40." The following varieties in order gave the largest yields: Black—Ontario, Kerry, Kentish Hero and Ethel. Red—Knight Large Red, Wilder, Greenfield and Benwell. White—White Grape, Large White and Verrieres White.

GOOSEBERRIES.

The gooseberries were kept clean with a mulch from the strawberries. They were sprayed and produced a heavy crop of excellent fruit. The following varieties gave the largest yield in order mentioned: May Duke, Houghton, Downing and Industry.

RASPBERRIES.

The raspberry season of 1915 extended from August 5 to September 3. This fruit is always in demand and prices remained good throughout the season.

The average yield for four years of the leading varieties will be found in the following table:—

TEST of Varieties of Raspberries.

Variety	Colour.	First ripe fruit.	Size of fruit.	Average No. of pickings.	Average of 4 years. Yield per acre.
					Lb.
Shaffer	Purple	July 27	Large	9	2,384
Loudon	Red	" 17	Medium	9	2,850
Herbert	Red	" 17	Large	9	1,628
Cuthbert	Red	" 18	Large	8	1,579
Columbian	Purple	" 29	Large	8	1,556
Golden Queen	White	" 18	Medium	7	955

STRAWBERRIES.

The twelve seedling varieties received from Ottawa in 1914 made vigorous growth and fruited well in 1915. The yield per acre in boxes of the four heaviest yielding varieties is given in the following table:—

TEST of Seedling Varieties.

Variety.	Size.	First ripe fruit.	No. of pickings.	Yield per acre.
				Quarts.
Portia	Large	July 18	8	4,901
Valeria	Large	" 16	7	4,719
Julia	Small	" 15	9	3,895
Mariana	Large	" 15	8	3,812

Twenty-six other varieties were grown. The plantation of 1914 was badly winter-killed and the records here given of the leading three varieties are taken from the plantation set out in 1913:—

Variety.	Size.	First ripe fruit.	No. of pickings.	Yield per acre.
				Quarts.
Parker Earle	Large	July 16	10	4,730
Splendid	Large	" 15	8	3·080
Glen Mary	Large	" 14	7	2,090

A part of this old plantation was weeded early in the season of 1915. The fruit on the portion weeded ripened earlier but the yield was not so good as where the plants were left alone with the winter mulch between the rows.

TREES AND SHRUBS.

The many ornamental trees and shrubs that have been planted on the grounds of the Station and along the roadways made good vigorous growth and produced an abundance of bloom throughout the summer.

LAWNS.

The lawns were rolled as the frost went out in the spring and cut as required throughout the season, the horse-mower being used wherever possible. With the exception of a few areas that were attacked by the white grub the lawns retained a beautiful green matted appearance all summer. The areas affected were somewhat torn up by the birds digging up the grubs. The roots were so badly cut in places that the sod could be rolled as though prepared for moving. We allowed the birds to do their good work. The sod was rolled frequently. This kept the grass alive until the attack was spent. On the lawn between the Superintendent's residence and the barn a grass tennis court has been maintained for several years. The lines are drawn by raising the mower to cut them about one and one-half inches higher than the grass of the court. The appearance is attractive and the lines are always ready for the game. A new lawn was put down about the sweet peas and the new perennial flower border. A thick seeding of oats was sown with the grass seed, giving it a good covering in about two weeks from seeding. By the time the grass was covering the ground the oats were disappearing.

VEGETABLES.

Besides the regular test of varieties of vegetables, plots were sown or planted to cultural experiments in order to get data *re* the best methods of tillage, manuring and training of many of the leading vegetables. We were able to avoid land infested with club-root and the attacks of carrot rust fly and other pests were checked by the use of insecticides.

ASPARAGUS.

The asparagus rust so injured the bed that a new plantation will be set out another year.

BEANS.

Thirteen varieties of beans were planted on June 5. They made splendid growth. Some anthracnose was present. Owing to a spell of wet weather during the harvesting, the records of the yields of varieties were rendered almost useless.

BEETS.

Five varieties were sown May 18 in rows thirty feet long and thirty inches apart and the plants allowed to just crowd one another in the rows at maturity. The following is the record of the varieties:—

Name.	Fit for use.	Shape.	Quality.	Yield per acre.	
				Bush.	Lb.
Crosby Egyptian	August 6	Turnip	Good	441	20
Cardinal Globe	" 1	Globe	Good	435	30
Ruby Dulcet	" 1	Ball	Good	418	9
New Meteor	" 1	Turnip	Good	348	24
New Early Black Red Ball	" 10	Ball	Good	267	8

BRUSSELS SPROUTS.

One variety, Dwarf Improved, sown June 15, gave a return of 2 tons 1,246 pounds of sprouts per acre.

CABBAGE.

Eleven varieties were tested in 1915. The seed was sown in the hotbed on April 15 and pricked out on May 17. The plants were set out on June 11. The following table gives particulars and yields:—

Name.	Fit for use.	Average weight per head.	Per acre.	
		Lb.	Tons	Lb.
Flat Swedish	September 1	6	22	1,302
Fottler Improved Brunswick	" 2	5	21	108
Danish Summer Ballhead	August 25	6	20	1,818
Nofalt	" 5	4¼	15	1,944
Improved Amager Danish Roundhead	September 2	4¼	14	1,621
Copenhagen Market	August 25	4	13	717
Extra Amager Danish Roundhead	September 4	4	13	717
Danish Stonehead	August 25	3½	12	1,410
Early Jersey Wakefield	" 6	3	11	651
Danish Delicatesse	" 25	3	10	909
Paris Market	" 4	2¾	9	1,166

CAULIFLOWER.

The three varieties of cauliflower only gave fair returns. A few were injured by club-root. The following data were recorded:—

Name.	Fit for use.	Yield per acre.	
		Tons.	Lb.
Danish Giant Dryweather	August 21	3	970
Extra Selected Dwarf Erfurt	" 15	3	98
Early Snowball	" 17	2	1,518

CARROTS.

The records for the carrots were accidentally destroyed. They gave good yields. The injury from Carrot Rust fly was slight. The following list is in order of merit: Half-long Chantenay, Improved Danvers Half-long, Improved Nantes and Early Scarlet Horn.

CELERY.

The celery germinated well but damped off after being pricked out.

CORN.

Ten varieties of corn were planted on June 4, in hills three feet apart each way. The soil was heavy and needed drainage during the season of 1915. There were twelve hills of each variety. The following table gives the dates of maturity and number of ears that were pulled from each lot:—

Name.	Date ready for use.	Yield of plot. Ears.
Early Malcolm	September 15	74
Early Malakoff	" 15	67
Early Fordhook	" 15	64
Early Dawn	" 13	63
Early Iowa	" 13	47
Golden Bantam	" 21	44
Pocahontas Sweet	" 20	31
Perkins Extra Early Market	" 20	9
Extra Early Adams	" 20	6

CUCUMBERS.

The late season was unfavourable for cucumbers. Fordhook Famous was the heaviest yielder and Improved White Spine gave the next best out of the four varieties tested.

EGG PLANT.

The egg plant, though sown on April 15, failed again to mature.

LETTUCE.

The four varieties of lettuce grew well and supplied an abundance of crisp heads. The varieties are named in order of merit: Iceberg, Dreer All Heart, Grand Rapids Forcing, Giant Crystal Head.

MUSKMELON.

The muskmelon seed failed to germinate.

ONIONS.

Seven varieties of onions were sown on May 18. The onion maggot did much damage to the growing plants. Johnson Dark Red Beauty gave the best returns with Giant Red Wethersfield second.

PARSLEY.

The parsley failed to germinate.

PARSNIP.

The Intermediate gave a yield at the rate of 8 tons 525 pounds per acre, and Improved Hollow Crown gave a yield of 5 tons 1,070 pounds per acre. They were sown on May 18 and pulled November 13.

CHARLOTTETOWN.

PEPPERS.

The season was short for peppers which were sown in hotbeds on April 15, but by leaving them in flats and putting them back in the hotbeds in the autumn, we ripened quite a few New Neapolitan, Red Chili, and Long Red Cayenne.

PEAS.

Fifteen varieties of peas were planted May 20, in rows thirty feet long. The rows were three feet apart and the seed was planted one inch apart in the row. One half of each row was picked for green peas and the other half allowed to ripen.

The following table gives the records of each variety when ready for use and in pounds per acre and bushels of seed per acre:—

Name.	Ready for use. Green.	Yield per acre. Green Pods.	Yield per acre. Ripe shelled peas.	
		Lb.	Bush.	Lb.
Advancer	August 5	14,520	96	48
Heroine	“ 15	14,036	96	48
Dainty Duchess	“ 5	13,552	96	48
Telephone	“ 15	13,552	80	40
Quite Content	“ 5	13,552	80	40
Stratagem	“ 20	12,584	56	28
Premium Gem	“ 17	9,680	52	28
Juno	“ 12	13,552	48	24
The Lincoln	“ 12	13,068	48	24
Thomas Laxton	“ 22	9,680	48	24
Early Giant	“ 27	8,712	48	24
American Wonder	“ 1	7,744	48	24
Gregory Surprise	July 30	7,744	48	24
Sutton Excelsior	August 2	9,680	32	16
Gradus	July 30	4,596	32	16

RADISH.

The Turnip Early Scarlet White Tipped was ready for use in one month and ten days from seeding. It produced at the rate of 8,131 bunches per acre.

SQUASH.

Only four varieties of squash were planted on the 27th of April. The Golden Hubbard was ready for use August 17, the Long Vegetable Marrow August 28, and the Delicious and Crookneck September 17. The Golden Hubbard and the Delicious were superior to the others in quality, for cooking.

TURNIPS.

Eight varieties of table turnips were grown. The seed was sown May 21, and the roots harvested the 13th of November.

POTATOES.

Twenty-three varieties of potatoes were grown in rows 30 inches apart, with the plants 14 inches apart in the row. The seed planted was all from hill selected stock, and it was treated by soaking the uncut tubers for three hours in a solution of one part to two thousand of bichloride of mercury. The potatoes were sprayed regularly with poisoned Bordeaux throughout the season from July 13 to September 11, eight sprayings in all. The potatoes were planted June 5, and were dug October 5. Plot, 1/264 of an acre.

CHARLOTTETOWN.

TEST OF VARIETIES.

No.	Name of variety.	Form and colour.	Yield per acre. Sound.		Marketable.		Unmarketable.	
			Bush.	lb.	Bush.	lb.	Bush.	lb.
1	Table Talk	Oval White	400	24	263	27	136	57
2	American wonder	Long white	356	6	315	58	40	8
3	Bliss Triumph	Round red	355	51	295	54	59	57
4	Burbank Seedling	Long white	342	56	302	30	40	26
5	Dreer Standard	Long white	332	12	305	48	26	24
6	Early Rose	Long red	323	57	274	27	49	30
7	McIntyre	Long blue	323	57	254	6	69	51
8	Late Puritan	Oval white	322	34	277	12	45	22
9	Selina Burbank	Long white	306	54	224	57	81	57
10	Carman No. 1	Oval white	300	19	183	26	116	53
11	Irish Cobbler	Round white	279	57	188	23	91	34
12	Rawlings Kidney	Long white	279	40	215	36	64	4
13	Early White Rose	Long white	267	34	183	9	84	25
14	Green Mountain	Oval white	252	11	176	50	75	21
15	Empire State	Long white	242	17	169	24	72	53
16	California Red	Round red	236	14	193	3	43	11
17	Garnet Chili	Round red	226	36	178	12	48	24
18	Lion Paw	Long white	223	51	187	—	36	51
19	Ashleaf Kidney	Oval white	223	51	143	—	80	51
20	Rochester Rose	Oval red	223	18	186	27	36	51
21	Early Puritan	Oval white	199	21	141	20	58	1
22	Gold Coin	Oval white	196	4	145	12	50	52
23	Wee McGregor	Oval white	150	59	105	53	45	6

SWEDE TURNIPS FOR THE TABLE.

The plants were about 7 inches apart in the rows, the rows 30 inches apart and 30 feet long. The yield per acre was computed from these plots.

Name.	Yield of Plot.	Yield per acre.	
	lb.	Tons.	lb.
Best of All	100	29	80
Carter Invicta	95	27	1,176
Sutton Purple Top	95	27	1,176
Skirving Purple Top	90	26	272
Bangholm Purple Top	85	24	1,368
Hall Westbury	80	23	464
Favorite	75	21	1,560
Westbury Purple Top	70	20	656

SALSIFY.

The Long White Salsify gave a very good yield but the roots were branched so that there was a large amount of waste.

TOMATOES.

Eleven varieties of tomatoes were grown in hills four feet by four feet apart, five plants of each strain. They were picked and recorded as they ripened. On the 28th of September the balance of all the varieties was picked and sold green. The demand for tomatoes, either ripe or green, is much greater than the supply and the price has been high for several years. Tomatoes need good clean tillage. Manure or fertilizer containing nitrates should be applied very sparingly if the crop is to ripen. It would be much better to manure the land a year or two before planting tomatoes on it. The following were the yields of ripe and green fruit in 1915:—

Name.	Date of first ripe fruit.	Yield of plot.			Yield per acre.	
		Ripe.	Green.	Total.		
		lb.	lb.	lb.	Tons.	lb.
Prosperity	September 16	4½	70	74½	20	565
Alacrity	" 5	11	58	69	18	1,571
Sunnybrook Strain Earliana	" 5	9	54	63	17	304
Mutch Earliana	" 16	4	46	50	13	1,225
Johnson Jack Rose	" 18	3	42	45	12	503
Chalk Early Jewel	" 16	2¼	35	37¼	10	283
Florida Special	" 18	1½	33	34½	9	785
Rennie Earliest Round Scarlet Skin	" 7	5	28	33	8	1,968
Bonny Best	" 16	3½	29	32½	8	1,696
Line Bred Northern Adirondack	" 17	4½	8	12½	3	806
Bolgiano Extra Early		—	2	2		1,089

CULTURAL EXPERIMENTS.

A series of cultural experiments was started in 1915 with a number of the leading vegetables. A few brief notes are here given on the first season's work. Detailed statements will be made after several years' averages have been obtained.

BEANS.

A comparison of the relative advantages of a succession of varieties of different seasons with the same variety planted at intervals of a week apart for four weeks gave returns in favour of sowing early and late varieties at the same time rather than several sowings of one variety.

CABBAGE.

Tests were made with two varieties of cabbage; Early Jersey Wakefield and Copenhagen Market, to determine the best method of protecting them from the root maggot. Tar felt discs were used in comparison with a cheese cloth covering. A check of each variety was planted alongside. The tar felt saved 4 per cent more than grew without protection. The cheese cloth was expensive and greatly injured the growing plants so that they produced less than half the check rows.

CAULIFLOWER.

A similar experiment to the above was tried with cauliflower, using tar felt discs, cheese cloth and checks without protection. The tar felt discs were quite valuable in saving the cauliflower and those protected in this way yielded about one-half more than the check while those protected with cheese cloth produced about one half as much as the check.

CHARLOTTETOWN.

THINNING OF VEGETABLES.

Three 100-foot rows each of beets and parsnips were sown on the 18th of May. The plants in one row of each vegetable were thinned to 2 inches apart, the second row to 3 inches apart, and the third row to 4 inches apart. The result was as follows:—

Vegetable.	Yield per acre when sown.					
	2 in. apart.		3 in. apart.		4 in. apart.	
	Tons.	lb.	Tons.	lb.	Tons.	lb.
Early Model Beet	10	909	9	1,079	10	1,694
Hollow Crown Parsnip	11	1,000	14	227	13	1,704

POTATOES.

An experiment was conducted to determine the best number of eyes to leave in potato sets for planting. Two varieties were used, Early Puritan and Gold Coin. The following table gives the average returns from duplicate plots:—

Kind of sets.	Yield per acre Marketable.		Yield per acre Unmarketable.		Total yield per acre		Bush. of sets per acre planted.		Yield per acre less amount of sets used for planting.	
	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.
Whole potatoes	132	24	150	42	283	6	48	24	234	42
Sets with 1 eye	135	51	47	18	183	9	18	42	164	27
Sets with 2 eyes	133	6	73	34	206	40	31	54	174	46
Sets with 3 eyes	148	30	89	55	238	25	46	45	191	40
*Check	145	68	48	31	194	39	26	24	168	15

Note.—The sets used in the check row contained 1 or 2 good strong eyes.

The land in the above experiment was not as uniform as we would have liked it, as shown by the checks. The above data would indicate that a good large set is more important than one with many eyes in it. A large number of eyes would appear to increase the percentage of small potatoes.

The experiment with planting potatoes at different dates gave the largest return of potatoes from the first planting, May 24. The plantings made on June 1 and June 15 were fairly good. The potatoes planted on June 8 and 24 were poor.

A comparison was made between potatoes cut and coated at once with lime, with sets not so coated and planted the same day. Those limed gave much better returns. A further experiment was tried by treating the sets as above and holding them in the cellar two weeks. The results from this experiment were not so marked. The number of marketable potatoes harvested from the limed sets was greater but the total yield was not so great. The experiments would indicate that lime applied to fresh cut sets is advantageous.

An experiment was conducted to determine the best distances apart for planting potatoes. Two varieties of potatoes were used, one the Early Puritan and the other Green Mountain, for a main crop variety. The sets used had three eyes and the plots were all grown in duplicate. The following table would indicate that with both varieties the rows 30 inches apart and plants 14 inches apart in the row produced the heaviest crop.

Distance between Rows and between Plants.

Rows.	Plants.	Variety.											
		Early Puritan.						Green Mountain.					
		Marketable. per acre.		Unmarketable. per acre.		Yield per acre. Total.		Marketable. per acre.		Unmarketable. per acre.		Yield per acre. Total.	
In.	In.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.
30	12	144	6	151	48	295	54	226	11	95	50	322	1
30	14	149	36	154	—	303	36	299	4	92	24	391	28
36	12	138	12	124	26	262	38	191	13	72	11	263	24
36	14	126	55	112	28	239	23	173	22	58	22	232	17

Cost of Growing One Acre of Potatoes.

One half of an acre was planted with Irish Cobbler, an early variety, and another one half acre alongside was planted with Green Mountain, a main crop variety of potatoes. In the following table a record is given of the cost of growing these potatoes:

Details with cost.	Variety.	
	Irish Cobbler.	Green Mountain.
Number of acres	½	½
Rent of land at $3 per acre	$1 50	$1 50
Share of manure at the rate of 25 tons per acre	2 50	2 50
Use of machinery at 60 cents per acre	30	30
10 bushels of seed at 50 cents per bushel	5 00	5 00
Plowing and ribbing, autumn 1914, 2½ hours at 34 cents	85	85
Harrowing in autumn, 2 hours and 36 minutes at 34 cents	97	97
Discing in Spring 37 minutes at 41 cents per hour	25	25
Harrowing in Spring, 1 hour at 34 cents per hour	34	34
Rolling one-third hour at 34 cents per hour	11	11
Cutting sets, 4 hours and 25 minutes labour at 17 cents per hour	75	75
Planting, 1 hour at 34 cents per hour	34	34
Planting 1 hour labour at 17 cents per hour	17	17
Spraying, 1 hour and 10 minutes at 34 cents per hour	40	40
Spray material, 7 applications (poisoned Bordeaux)	2 98	2 98
Hoeing, 5 hours manual labour at 17 cents per hour	85	85
Cultivating, 3 hours at 27 cents per hour	81	81
Cultivating, 2 hours and 20 minutes at 34 cents per hour	80	80
Picking potatoes, 20 hours at 17 cents per hour	3 40	3 40
Digging and harrowing, 1 hour and 17 minutes at 34 cents per hour	44	44
Hauling, 2 hours at 27 cents per hour	54	54
Storing, 7 hours at 17 cents per hour	1 19	1 19
Cost per plot	$24 49	$24 49
Cost per acre	$48 98	48 98
	Bush. lb.	Bush. lb.
Yield of potatoes per plot	128 43	151 10
Yield of potatoes per acre	257 26	302 20
Cost to produce 1 ton of potatoes	$6 47	$5 40
Cost to produce 1 bushel of potatoes	·19·03c.	·16·2c.

TOMATOES.

The cultural work with tomatoes gave much more uniform results and is reported more in detail in the following tables.

EXPERIMENT to determine best method of Growing Tomato Vines to secure Ripe Fruit. Plots 200 square feet, or 1/217·8 acre.

Method.	Varieties.									
	Bonny Best.					Earliana.				
	Date of first ripe fruit	Yield of ripe fruit per plot.	Yield of green fruit per plot.	Total yield per acre.		Date of first ripe fruit	Yield of ripe fruit per plot.	Yield of green fruit per plot.	Total yield per acre.	
	Sept.	lb.	lb.	Tons.	lb.	Sept.	lb.	lb.	Tons.	lb.
Plants allowed to grow unpruned and left lying on the ground in hills 4 feet apart each way.	10	7½	116	13	681	10	87	144	17	1,393
Plants pruned to 1 stem. Planted in rows 4 feet apart and 2 feet apart in the rows. Tied to stakes 5 feet long. Side shoots pinched out......	17	20½	68	9	1,274	10	12	33	4	1,801
Plants pruned to 1 stem. Planted in rows 4 feet apart and 2 feet apart in the rows. Tied to wires. 1st, 15 in. from ground. 2nd, 18 in. above 1st. 3rd, 18 in. above 2nd..............	17	14½	58	7	483	17	14½	48	6	1,612
Plants pruned to 1 stem. Planted in rows 4 feet apart and 2 feet apart i½ rows. On stakes with half foliage removed....	17	13	67	8	1,424	17	12	43	5	1,979
Plants pruned to 2 stems and tied to stakes and wire.....................	17	6	85	9	1,820	21	3	46	5	672

The above results would indicate that tomato plants will produce more fruit if planted four feet apart and allowed to spread out over the ground. The Earliana not only produced more fruit in this way but produced a much greater quantity of ripe fruit.

EXPERIMENT to Determine the Best Method of Ripening Green or Partly Ripe Tomatoes.

Method.	Bonny Best.			Earliana.		
	Rotten.	Ripe.	green.	Rotten.	Ripe.	Green.
	%	%	%	%	%	%
1st— Fruit put in shade in moderately warm place, showing traces of red......................	46	27	27	46	18	36
2nd— Fruit put in closed box without ventilation. Fruit green......................................	28	48	6	24	36	40
3rd— Put in closed box without ventilation. Fruit showing traces of red......................	76	12	12	64	16	20
4th— 12 plants hung in moderately warm building...	15	0	85	10	1½	88½

The above fruit was picked on September 28, and examined on October 28, 1915.

CHARLOTTETOWN.

ONIONS.

Onions were thinned to 1 inch, 2 inches, and 3 inches in the row. The average yield per acre of the three varieties when thinned to 1 inch was 8,538 pounds per acre; when thinned to 2 inches, 9,060 pounds per acre, and when thinned to 3 inches, 7,492 pounds per acre.

The method of planting was compared as follows: Three varieties were sown in the open on May 18, and thinned to three inches apart. The average yield per acre was 7,492 pounds. The same varieties were sown in the hotbeds on April 15, and transplanted to a distance of 3 inches apart. They gave an average yield of 6,622 pounds per acre. Yellow onion sets were planted May 24, 3 inches apart. They gave a yield at the rate of 8,190 pounds per acre.

Onion sets were grown from three varieties by sowing the seed at the rate of not less than 200 seeds per inch. This crowded the plants so that the sets matured well when one-half to one-quarter inch in diameter.

FLOWERS.

ANNUALS.

The season of 1915 was favourable for most of the annual flowers. The moist season tended to produce large magnificent flowers of the different sorts. The seed obtained in the spring of 1915 was not so good as we have had in former years and quite a number of sorts are omitted from the list of annual flowers as the seed failed to germinate. The aster disease, which turns the leaves and flowers yellow, was not so bad as in former years. The sweet peas were given new ground and rivalled the best we have ever had. A list of the twelve varieties recommended by this Station is here given:—

SWEET PEAS—TWELVE BEST VARIETIES.

Variety.	Colour.	Began to Bloom.
King White	White	July 24.
Rosabelle	Rose	July 23.
Wedgewood	Blue	July 23.
Thos. Stevenson	Orange scarlet	July 24.
Mrs. Townsend	White and blue	July 24.
Maud Holmes	Crimson	July 24.
Mrs. C. W. Breadmore	Cream with buff edge	July 24.
Margaret Atlee	Cream pink	July 24.
R. F. Felton	Lavender	July 25.
King Manoel	Maroon	July 26.
Clara Curtiss	Cream	July 26.
John Ingman	Carmine	July 26.

The above varieties continued blooming until killed by the heavy frosts in October.

The following statement gives some of the details recorded concerning our annual flowers:—

No. of varieties.	Name.	Date planted under glass.	In bloom.		Remarks.
			From	To	
2	Acroclinium	April 17	June 30	Oct. 20	Excellent.
1	Alonsoa	April 15	July 25	Oct. 25	Fair.
1	Arctotis	April 17	July 23	Sept. 20	Good.
31	Aster	April 15	Aug. 15	Oct. 11	Good.
1	Balsam	April 24	Aug. 11	Oct. 2	Fair.
2	Calendula	April 24	July 11	Oct. 20	Excellent.
3	Candytuft	April 15	July 8	Oct. 20	Good.
1	Castor Oil Plant	April 19	July 15	Nov. 1	Excellent.
1	Carnation	April 15	Aug. 30	Sept. 20	Fair.
1	Celosia	April 15			No bloom.
1	Centranthus	June 7	Aug. 20	Oct. 20	Good.
3	Chrysanthemum	April 15	July 1	Oct. 20	Very good.
2	Clarkia	April 24	July 1	Oct. 17	Fair.
2	Coreopsis	April 15	July 12	Oct. 20	Good.
2	Cosmos	April 15	June 26	Nov. 2	Extra good.
1	Daisy	April 15			Did not germinate.
1	Eschscholtzia	June 7	Aug. 9	Oct. 11	Fair.
1	Everlasting	April 24	July 23	Oct. 20	Good.
1	Gaillardia	April 15	July 23	Oct. 20	Good.
1	Helichrysum	April 24	Aug. 10	Oct. 20	Excellent.
1	Kochia	April 15			Good.
5	Larkspur	April 24	Aug. 6	Oct. 20	Excellent.
1	Lavatera	June 7	Aug. 17	Oct. 20	Excellent.
1	Leptosiphon	April 24	June 24	Aug. 1	Very good.
1	Linum	June 7	Aug. 5	Oct. 11	Good.
2	Lobelia	April 15	July 15	Oct. 20	Good.
2	Lupinus	June 7	Aug. 5	Oct. 20	Good.
1	Malope	June 7	Aug. 27	Oct. 25	Good.
2	Marigold	April 20	July 4	Oct. 20	Very good.
2	Mignonette	April 24	Aug. 20	Oct. 20	Fair.
9	Nasturtium	May 31	Aug. 4	Nov. 2	Good.
8	Nemesia	April 17	July 9	Oct. 20	Extra good.
1	Nicotiana	April 15	Aug. 4	Oct. 20	Good.
7	Pansies	April 15	July 5	Dec. 27	Good.
1	Penstemon	April 24			Did not bloom.
3	Petunia	April 15	July 9	Nov. 1	Good.
7	Phlox Drummondii	April 15	July 11	Nov. 2	Extra good.
4	Poppy	May 31	Aug. 11	Oct. 11	Good.
1	Portulaca				Did not germinate.
1	Rudbeckia	April 24	July 16	Oct. 20	Very good.
2	Salpiglossis	April 24	Aug. 6	Oct. 20	Good.
2	Salvia	April 24	Aug. 16	Nov. 1	Good.
1	Scabiosa	April 24	July 23	Oct. 20	Fair.
1	Schizanthus	April 24	July 9	Oct. 20	Fair.
7	Stock	April 15	July 8	Dec. 7	Extra good.
1	Swan River Daisy	June 7	Aug. 8	Oct. 2	Good.
1	Sweet Alyssum	April 24	June 17	Oct. 20	Good.
2	Sweet Sultan	April 24	Aug 1	Oct. 20	Fair.
1	Tagetes	April 24	July 8	Oct. 20	Extra good.
110	Sweet Peas	April 23	July 20	Nov. 15	Extra good.
5	Verbena	April 15	July 12	Oct. 23	Good.
1	Viscaria	April 24	July 23	Oct. 2	Fair.
3	Zinnia	April 15	June 30	Oct. 7	Good.

The season for bulbs was ideal and we had the finest showing that we have yet grown at this Station. The cool weather retarded the falling of the bloom until very late in the season. Lists of the different bulbs are here given with details *re* height, colour, and blooming period.

CHARLOTTETOWN.

EARLY TULIPS.

Variety.	Height.	Colour.	Blooming Period.	
			From	To
	Inches.			
Artus	12	Bright Red	June 1	June 18
Chrysolora	13	Orange yellow	May 29	June 16
Cottage Maid	12	Rose and white	June 1	June 17
Duchesse de Parma	17	Brick and yellow	May 31	June 14
Joost van Vondel, red	14	Red	June 1	June 16
Joost van Vondel, white	15	White	May 26	June 10
Keizerskroon	16	Red and yellow	June 6	June 18
La Reine	17	White	May 29	June 16
Pottebakker, scarlet	16	Scarlet	May 31	June 18
Pottebakker, white	18	White	May 26	June 16
Proserpine	14	Pink	June 6	June 22
Vermilion Brilliant	13	Scarlet	May 29	June 17
Couronne d'or	12	Orange scarlet	June 7	June 18
Imperator rubrorum	14	Scarlet	May 29	June 18
Murillo	11	Pink and white	June 7	June 21

LATE TULIPS.

Darwin Mixture, 11 sorts	30	Varied colours	June 13	July 3
Gesneriana Spathulata	23	Scarlet	June 15	June 26
Inglescombe Yellow	20	Yellow	June 14	July 3
Isabella	19	Pink and white	June 8	July 3
La Candeur	17	White	June 14	June 26
La Merveille	24	Bronze salmon	June 14	July 3
Picotee	25	White, pink edged	June 20	June 28
The Fawn	16	Fawn	June 14	July 3
Yellow Rose	25	Golden yellow	June 14	July 3

OTHER BULBS.

Crocus—				
Crocus General mixed	5	Varied	April 21	May 15
Freesia—				
Freesia refracta alba	7	White	May 8	May 27
Narcissus—				
Albo pleno odorato	14	White	May 28	June 5
Barri Conspicuus	15	Yellow	May 21	June 19
Cynosure	16	Orange Cup	June 4	June 18
Double Van Sion	9	Yellow	May 24	June 14
Emperor	15	Yellow	May 25	June 16
Empress	14	Yellow and white	May 25	June 16
Figaro	15	Pale yellow	May 31	June 16
Golden Spur	12	Deep yellow	May 21	June 10
Incomparabilis plenus	15	Rich yellow	May 31	June 14
Orange Phoenix	15	Orange and white	May 31	June 16
Princeps	11	Yellow	May 24	June 10
Sir Watkin	16	Deep yellow	May 24	June 16
Victoria	13	Clear yellow	May 25	June 16

PERENNIALS.

The new 12-foot perennial borders were filled up with seedling stock and with mature plants removed from the east lawn near the office door. These hardy flowers are deservingly popular about the country homes as they require less attention than the annuals at the busy seasons of the year. If one were to single out any of these beautiful flowers for special mention, the pæonies would come first both on account of the wonderful size and number of blooms and for the deep green foliage that remains an ornament through the summer. The Kentucky water-lilies have spread over quite an area of the natural pond near the Station buildings and would make a close second to the paeonies. Both these were greatly admired by visitors.

A number of the outstanding perennials with brief notes are mentioned in the following table:—

No. of varieties.	Name.	Height.	In Bloom.		Remarks.
			From	To	
		Inches.			
8	Aquilegia (Columbine)	20 to 30	June 5	Aug. 18	Good.
19	Campanula (Bell Flower)	12 to 48	July 10	Sept. 1	Extra good.
15	Delphinium (Larkspur)	18 to 60	June 23	Sept. 7	Extra good.
2	Dianthus	6 to 10	June 18	Aug. 28	Good.
29	Gladioli	28 to 42	Aug. 16	Sept. 29	Good.
5	Hollyhock	48 to 60	Aug. 10	Sept. 7	Fair.
50	Iris	11 to 36	June 9	July 16	Medium.
4	Lupinus	23 to 41	June 20	July 15	Good.
6	Phlox	15 to 39	Aug. 24	Nov. 2	Extra good.
38	Pæony	22 to 44	June 30	Aug. 17	Extra good.
4	Sweet William	18 to 26	June 30	Sept. 1	Good.
5	Water-lilies	24 to 48	June 11	Sept. 10	Excellent.

CHARLOTTETOWN.

EXPERIMENTAL FARM, NAPPAN, N.S.

REPORT OF THE SUPERINTENDENT, W. W. BAIRD, B.S.A.

HORTICULTURE.

The unsettled nature of the winter of 1914-15 was very disappointing to horticulturists. For the greater part of the winter the ground was quite bare; this combined with the extreme fluctuations in temperature made the season more than ordinarily severe on such crops as strawberries, perennials, etc. The spring continued unsatisfactory, cold wet weather prevailing until the end of May.

June started in with fine warm days, but the nights continued cool, preventing any outside work of any consequence being done. On the night of the 3rd a reading of 2° Fahr. of frost was recorded. This was rather disastrous in that it ruined the foliage of those shrubs which had started growth, and even the large shade trees suffered severely. Following this, however, the weather became more favourable, permitting the rushing of seeding operations.

The cold wet weather of the spring was a great handicap to cultural experiments in vegetables. The location selected for these experiments was so wet that no work could be done upon it until the 15th of June. The result of the late start was noticeable throughout the whole season and it prevented any results being obtained from many of the experiments. The same applies to a new small fruit plantation started this season. The young plants had to be held over so long before being set in their permanent places that a large percentage of them never recovered.

July and August were quite seasonable months. Good growth in trees and shrubs and abundant bloom was the direct result. Notwithstanding the reorganization of the perennial border and lack of bulbs, the bloom was abundant and received high praise.

The balance of the season was quite unsettled, but by taking advantage of the favourable weather, the greater part of the large fruits and potatoes were harvested and stored in good condition. Bulbs were planted during a few fine days in November under very favourable conditions.

Speaking generally, the season was very disappointing in that the adverse conditions prevailing during the spring months placed all horticultural crops under a disadvantage from which they did not recover during the remainder of the summer.

Some Weather Observations taken at Nappan Experimental Farm, 1915.

Month.	Temperature F.			Precipitation.			Total Sunshine.
	Highest.	Lowest.	Mean.	Rainfall.	Snowfall.	Total.	
	°	°	°	Inches.	Inches.	Inches.	Hours.
January	53	−10	21·61	2·69	14·00	4·09	75·10
February	54	−14	23·64	1·01	3·00	1·31	94·70
March	48	9	26·35	......	12·00	1·20	75·00
April	62	18	36·50	2·19	11·00	3·29	100·90
May	71	26	45·72	4·43	....	4·43	136·15
June	81	30	56·44	3·57	....	3·57	195·00
July	81	43	62·99	1·95	....	1·95	215·10
August	81	34	63·04	4·67	....	4·67	186·60
September	78	32	56·49	1·47	....	1·47	175·70
October	68	24	48·11	4·11	....	4·11	145·60
November	57	19	38·46	4·63	....	4·63	47·90
December	52	6	28·59	3·96	8·00	4·76	64·40
Total for year				34·68	48·00	39·48	1,512·15
Average for 5 years				30·79	54·34	36·73	1,884·67
Total for 6 growing months, April to September				18·28	11·00	19·38	1,009·45
Average for 5 years for 6 growing months, Apr. to September.				17·74	8·50	18·59	1,228·34

TREE FRUITS

Large fruits were, as a general rule, below the average in quantity. The earlier varieties produced an average yield but the fall and winter varieties were disappointing. This was, no doubt, largely due to the unfavourable weather conditions prevailing during the blossoming period. Three sprayings only were given during the season, the early or dormant spray being missed. All of these sprays were of lime sulphur and lead arsenate with the exception of some experiments in which Bordeaux mixture and arsenate of lead were used. They were made in the following strengths at the period stated:—

First spray when leaf clusters were showing green—		
Lime-sulphur	gallons.	3
Lead arsenate	pounds.	5
Water	gallons.	100
Second spray when the petals of flower blossoms had fallen—		
Lime-sulphur	gallons.	2½
Lead arsenate	pounds.	5
Water	gallons.	100
Third spray two weeks later—		
Lime-sulphur	gallons.	2½
Lead arsenate	pounds.	5
Water	gallons.	100

Fruit was remarkably clean notwithstanding the favourable condition for fungi development. Insects, excepting aphis, gave but little trouble. The aphis were quite prevalent but were easily controlled by application of Black Leaf 40, 1 pint to 100 gallons of water. This was, in our case, mixed with lime sulphur and applied during the last two sprayings.

The following experiment was again conducted this year to determine the relative efficiency of Bordeaux mixture and lime sulphur. Standard strengths were used in all cases.

SPRAY EXPERIMENTS.

Lime Sulphur *versus* Bordeau Mixture.

—	Clean.	Wormy.	Scab.	Russet.	Oyster Shell Scale.
Lime Sulphur:—	%	%	%	%	%
Beautiful Arcade	84	12	....	....	4
Long Arcade	81	16	....	3	....
Grandmother	72	20	3	5	....
Duchess	67	29	....	....	4
Winter Bough	74	14	....	7	5
Pewaukee	84	7	3	4	2
Bordeaux:—					
Beautiful Arcade	69	9	3	17	2
Long Arcade	60	14	5	21	....
Grandmother	58	11	....	27	4
Duchess	44	30	5	15	6
Winter Bough	53	8	....	34	5
Pewaukee	64	13	3	20	....

These results, considered along with those of last year, conclusively show that cleaner fruit is obtained when lime sulphur is used than when Bordeaux mixture is applied. This is applicable to this section of the province in particular.

NAPPAN.-

COMMERCIAL ORCHARD.

For the purpose of obtaining the actual cost of bringing an orchard into profitable bearing complete records are being kept from year to year of the expenditure incurred by the different cultural operations also the revenue obtained from the various inter-crops. The following statement shows the financial standing of this orchard at the end of the fifth year.

1915 Date.		Work engaged in.	Manual Labour at 17 cts. per hour.	Cost.	Horse Labour and Teamster 1 horse at 27 cents; 2 horses at 34 cents; 3 horses at 41 cents; 4 horses at 48 cents.	Cost.
				$ cts.		$ cts.
1911				69 50		28 80
1912				19 50		23 90
1913				38 00		35 15
1914				150 96		35 11
Feb	23	Pruning	1 man 3 hours	51		
May	26	Spraying	2 men 1 hour	34	2 horses 1 hour at 34 cents	34
June	1	Spraying	2 men 1 hour	34	2 horses 1 hour at 34 cents	34
"	14	Spreading manure	1 man 10 hours	1 70	2 horses, 22 hours at 34 cents	7 48
"	14	Manure	30 tons at $1 p. ton	30 00		
"	16	Ploughing			2 horses 5.5 hours at 34 cents	1 87
"	16	Harrowing			2 horses 5.5 hours at 34 cents	1 87
"	16	Harrowing	1 man 11 hours	1 87		
"	17	Harrow'g, double cutaway			4 horses 5 hours at 48 cents	24
"	17	Cutting sets	1 man 10 hours	1 70		
"	19	Planting potatoes	2 men 20 hours	6 80		
"	19	Running drills			2 horses 11 hours at 34 cents.	3 74
"	21	Planting potatoes	2 men 3 hours	1 02		
"	21	Running drills			2 horses 2 hours at 34 cents	68
"	21	1 pound bichloride for treating potatoes		1 80		
"	29	Harrowing down drills			2 horses 1 hour at 34 cents	34
July	15	Spraying potatoes			2 horses 1 hour at 34 cents	34
"	15	Spraying potatoes	2 men 1 hour	34		
"	16	Hoeing potatoes	2 men 40 hours	13 60		
"	16-28	Cultivating (4 times 2½ hours each)			1 horse 10 hours at 27 cents	2 70
"	20	Weeding	1 man 16 hours	2 72		
"	22	Weeding	2 men 10 hours	3 40		
"	26	Mowing cover crops	1 man 10 hours	1 70		
"	29	Spraying potatoes	2 men 10 hours	3 40	2 horses 10 hours at 34 cents.	3 40
"	29	Picking berries at 1·5c per box		13 47		
Oct.	1	Digging and picking potatoes	6 men 10 hours	10 50	1 horse 5 hours at 27 cents	1 35
		3,000 strawberry plants at $6.00		18 00		
		15 bushels seed potatoes		15 00		
			Total	406 17		147 65

Revenue.—Revenue from former years, $196.16; from the rate of potatoes, grain and strawberries for 1915, $304.46; total revenue $500.62, leaving only a small deficit against the orchard of $53.20 at the end of five years.

It is of interest to know that some of the earlier maturing varieties such as Duchess and Wealthy bore some fruit during the last season, which means that a slight revenue will soon be realized from the trees.

PEARS, PLUMS AND CHERRIES.

This orchard is now of no further use for experimental purposes. A general summary of the results obtained was published in last year's report.

NAPPAN.

SMALL FRUITS.

STRAWBERRIES.

As mentioned under seasonal notes the weather during the winter was particularly severe on strawberries, many of our best varieties being entirely killed out. This crop was grown in the commercial orchard and, apart from the winter killed plots, gave an average yield. Below are the varieties tested and yields obtained from plots of 1/528 of an acre with estimated yields per acre.

Name.	Yield per plot.	Yield per acre.
	Quarts.	Quarts.
1. Seedling No. 12	27	14,256
2. Pearl	27	14,256
3. Equinox	22	11,616
4. John Little	21	11,088
5. H. W. Beecher	19	10,032
6. Gandy	18	9,504
7. Princess	17	8,976
8. Beverly	16	8,448
9. Jas. Vick	16	8,448
10. Haverland	16	8,448
11. Senator Dunlap	16	8,448
12. Williams	16	8,448
13. Capt. Jack	16	8,448
14. Maggie	14	7,392
15. Paris King	14	7,392
16. Crescent	14	7,392
17. St. Antoine de Padoue	14	7,392
18. Hood River	14	7,392
19. Afton	14	7,392
20. Pocomoke	13	6,864

A new plantation of raspberries, dewberries, currants and gooseberries was established in June. As stated before, however, the lateness of the season and the unworkable nature of the soil prevented the planting of these bushes until late and consequently many of them died. These will be replaced. The following varieties will be selected for testing:—

Raspberries.—Ruby Red, Heebner, Eaton, King, Brighton, Herbert, Loudon, Count, Sarah.

Black Currants.—Climax, Victoria, Collins prolific, Buddenborg, Kerry, Clipper, Eagle, Eclipse, Saunders, Magnus, Boskoop Giant.

Red Currants.—Cherry, Pomona, Cumberland Red, Victoria, Red Grape, Red Dutch, Rankins Red, Greenfield, Wilder.

White Currants.—White Grape, Large White, White Cherry.

Gooseberries.—Oregon Champion, Houghton, Carrie, Josselyn, Pearl.

NEW PLANTATION MADE.

Two new plantations of rhubarb and asparagus were also started in the same place of the following varieties:—

Rhubarb.—Hobday Giant, Victoria, Linnaeus.

Asparagus.—Columbian Mammoth, Conover Colossal.

NAPPAN.

VEGETABLES.

Variety tests of the various vegetables were made as in previous years, but the lateness of the season and unfavourable nature of the ground spoiled these experiments to a large extent. The following were the varieties tested and the yields obtained.

SQUASH.

Five varieties were planted in hills on the 17th of June. The hills were sufficient distances apart to prevent the intermingling of the vines. The yields were as follows:—

No.	Name.	Fit for use.	No. of squash.	Average.	Total weight.
				lb.	lb.
342	Golden Hubbard	Nov. 17	8	9	72
343	Hubbard	" 17	8	8·5	68
341	Long Vegetable Marrow	" 29	8	4	32
345	Delicious	" 17	8	4	32
340	Delicata	" 30	8	2¼	18
344	Crookneck	" 17	8	1⅕	9⅗

CABBAGE.

Twelve varieties of cabbage were sown in hotbeds on the 13th of April and were transplanted to the open on June 16 in rows 33⅓ feet long and 36 inches apart, the plants being 18 inches apart in the rows. Twenty average heads of each variety were weighed and recorded as follows:—

No.	Name.	Quality.	Date of Harvesting.	No. of Head.	Average weight per head.	Total weight.
					lb.	lb.
265	Flat Swedish	Good	October 24	20	7·5	150
264	Danish Summer Ballhead	Good	" 24	20	4·5	90
266	Extra Amager Danish Roundhead	Medium	" 24	20	3·75	75
267	Improved Amager Danish Roundhead	Medium	" 24	20	3·65	73
370	Extra Amager Danish Ballhead	Poor	" 24	20	2·8	56
268	Fottlers Improved Brunswick	Good	" 24	20	3·15	63
262	Paris Market, Very Early	Good	" 24	20	2·8	56
261	Early Jersey Wakefield	Good	" 24	20	2·35	47
260	Nofalt	Poor	" 24	20	2	40
347	Danish Stonehead (Red)	Good	" 24	25	3	75
346	Danish Delicatesse (Red)	Medium	" 24	25	2·4	60
263	Copenhagen Market	Good	" 24	20	1·75	35

CAULIFLOWER.

Three different varieties of cauliflower were sown in hotbeds on the 16th of April and transplanted to the open on June 16 in rows 33½ feet long and 36 inches apart, the plants being 14 inches apart in the rows. The results were as follows:—

No.	Name.	Fit for use.	Quality.	No. of Head.	Yields.	
					Average.	Total.
					lb.	lb.
269	Early Snowball	Sept. 1	Good	24	1·54	37
270	Extra Selected Early Dwarf Erfurt	" 3	Good	24	1·7	40·8
271	Danish Giant Dryweather	" 1	Medium	24	1·71	41·1

NAPPAN.

TOMATOES.

Nine varieties of tomatoes were sown in hotbeds on the 15th of April. They were transplanted to the open on June 17 in rows 33⅓ feet long, the plants being 4 x 4 feet apart. The following table gives the results:—

No.	Name.	Fit for use Quality.	Yields.		
			Ripe.	Green.	Total.
			lb.	lb.	lb.
359	Bonny Best	Sept. 10.... Fair....	2½	20	22½
357	Rennie XXX Early Round Scarlet Skin	Sept. 15.... “	3	16	19
362	Sunnybrook Strain Earliana	“	......	19	19
363	AAlacrity 12B	“	......	18	18
358	Line Bred Northern Adirondack Grade No. 1	Sept. 18. “	½	15½	16
360	Johnson Jack Rose	“	......	14	14
356	Bolgiano Extra Early Wealthy	Sept. 20. “	1½	12	13½
361	Chalks Early Jewel	“	......	8	8
363	BAlacrity 14B	“	......	6	6

ONIONS.

Five varieties of onions were sown in hotbeds on the 23rd of March. These were transplanted to the open on June 16 in rows 33⅓ feet long. The results obtained were as follows:—

No.	Name.	Fit for use.	Colour.	Quality.	Weight.
					lb.
318	Large Red Wethersfield	Oct. 11	Red	Fair	28
314	Red Globe	Oct. 11	Red	Fair	25
317	Danvers Yellow Globe	Oct. 11	Yellow	Fair	23
316	Yellow Globe	Oct. 11	Yellow	Fair	19½
315	White Globe	Oct. 11	White	Fair	17

PEAS.

Twelve varieties of peas were sown on June 16 in single rows 33⅓ feet long and 30 inches apart. The following results were obtained:—

No.	Name.	Fit for use.	Quality.	Height.	Dates and Yields.				Total of green peas in pod.
					Aug. 13.	Aug. 18.	Aug. 23.	Aug. 29.	
				Inches.	lb.	lb.	lb.	lb.	
336	Telephone	Aug. 15	Good	40	....	7	6½	4	17½
331	Gregory Surprise	Aug. 8	Good	40	11	4	1½	....	16½
337	Thos. Laxton	Aug. 13	Good	40	....	6	6	4	16
335	Sratagem	Aug. 23	Good	20	....	....	7	8	15
328	Sutton Excelsior	Aug. 15	Good	27	....	9	....	5	14
327	Gradus	Aug. 13	Good	50	3	5	4	....	12
330	Advancer	Aug. 12	Good	20	4	5	3	....	12
332	Early Giant	Aug. 6	Medium	50	8	2	....	....	10
326	Dainty Duchess	Aug. 16	Medium	45	....	2½	3	4	9½
333	The Lincoln	Aug. 16	Medium	25	....	3	4	2	9
334	Juno	Aug. 23	Good	20	....	5	....	2½	7½
329	Quite Content	Aug. 16	Medium	50	....	2	3	1½	6½

NAPPAN.

BEANS.

Ten varieties of beans were sown on the 16th of June in rows 33⅓ feet long and 3 feet apart. The following results were obtained:—

No.	Name.	Fit for use.	Colour.	Quality	Length of pod.	Dates and Yields.			Total weight.
						Aug. 24.	Sept. 3.	Sept. 9.	
					Inches.	lb.	lb.	lb.	lb.
246	Refugee or 1000 to 1....	Aug. 20...	Green..	Fair....	4½–5	10	4	3	17
249	Valentine Wax..........	Aug. 24...	Yellow.	Fair....	4½	7	5	3	15
251	Extra Early Valentine..	Aug. 21...	Green..	Fair....	5	6	5	2	13
243	New White Seeded Stringless Green Pod.	Aug. 24...	Green..	Fair....	5½–6	4	8	0	12
245	Grennell Rustless Wax.	Aug. 30...	Yellow.	Fair....	4½	0	6	5	11
250	Wardwell Kidney Wax..	Aug. 30...	Yellow.	Fair...	4½–5	0	4	7	11
248	Stringless Green Pod...	Aug. 24...	Green..	Fair....	5½	5	3	0	8
252	Extra Early Refugee....	Aug. 22...	Green..	Fair....	4½	4	4	0	8
244	Bountiful Green Bush.	Aug. 20...	Green..	Fair....	6–6½	2	0	5	7
247	Golden Wax............	Aug. 30...	Yellow.	Fair....	5	0	3	3	6

BEETS.

Six varieties of beets were sown on the 16th of June in rows 33⅓ feet long and 30 inches apart. The beets were thinned to 2 inches apart. The following results were obtained:—

No.	Name.	Fit for use.	Shape.	Quality.	Weight when pulled.
					lb.
257	New Early Black Red Ball........................	Aug. 15..	Round....	Good.....	27
256	New Meteor..........	Aug. 18...	Turnip....	Good.....	23
253	Ruby Dulcet..	Aug. 12...	Round....	Good.....	22
255	Eclipse..	Aug. 15...	Pointed...	Good.....	20
254	Cardinal Globe......................................	Aug. 15...	....	Good.....	19
258	Crosby Egyptian....................................	Aug. 17...	Turnip....	Medium..	15

LETTUCE.

Five varieties of lettuce were grown in single rows 33⅓ feet long and 30 inches apart. The plants were thinned to 12 inches apart. The following results were obtained:

No.	Name.	Fit for use.	Quality.	Yield
				lb.
305	Grand Rapids Forcing........	Aug. 28...	Good.....	19
304	Giant Crystal Head..	Sept. 3..	Medium..	8
307	Iceberg.................	Sept. 15...	Poor......	7
308	Dreer All Heart...	Sept. 17...	Good.....	6
306	Black Seeded Simpson........	Sept. 25...	Good.....	5½

NAPPAN.

CARROTS.

Four varieties of carrots were sown on June 16 in rows 33⅓ feet long and thinned to 1¼ inches. The following results were obtained:—

No.	Name.	Harvested.	Shape.	Quality.	Weight when pulled
					lb.
275	Early Scarlet Horn	October 1	Long	Good	60
274	Half Long Chantenay	" 1	Half long	Good	51
272	Improved Danvers Half Long	" 1	Half Long	Medium	41
273	Improved Nantes	" 1	Half Long	Medium	30

CUCUMBERS.

Five varieties of cucumbers were planted on June 17 in hills. The hills were a sufficient distance apart to prevent the intermingling of the vines. Yields were obtained from all but White Spine (298). The following are the results obtained:—

No.	Name.	No. of Hills.	Quality.	Yields.
				lb.
297	Extra Early Russian	2	Good	8
296	Prize Pickle	2	Medium	5
299	Davis Perfect	2	Good	5
300	Fordhook Famous	2	Good	3

TURNIPS.

Eight varieties of turnips were sown for table use on June 16, in rows 33⅓ feet long and 30 inches apart. They were thinned to 12 inches apart. The yields were as follows:—

No.	Name.	Date harvested.	Yield. lb.
353	Carter Invicta	October 15	107
354	Sutton Purple Top	" 15	100
348	Best of All	" 15	98
352	Favorite	" 15	95½
350	Bangholm Purple Top	" 15	91
349	Westbury Purple Top	" 15	73
351	Hall Purple Top	" 15	52
355	Skirving Purple Top	" 15	51

The results obtained from artichokes, Brussels sprouts, celery, corn, peppers, radish, spinach and muskmelons were so poor that they were considered not worth recording. Lateness of season and poor state of land were the main causes.

CULTURAL EXPERIMENTS WITH VEGETABLES.

A large number of cultural experiments with vegetables were started this year, but here again many were spoiled by the season. Those from which results were obtained, and the necessary details of each, are enumerated below:—

Tomatoes.—Five experiments with tomatoes using the varieties Sunnybrook Earliana and Bonny Best, 25 plants of each variety, were conducted with the following results:—

1. Plants allowed to grow unpruned and left lying on the ground. Twenty-five plants of each variety were used and these were planted 4 feet apart each way.

(*a*) Sunnybrook Earliana	2½ lb. ripe.
	100½ lb. green.
	103 lb. total.
(*b*) Bonny Best	62 lb. ripe.
	41 lb. green.
	103 lb. total.

2. Plants were pruned to one stem and planted in rows 4 feet apart and plants 2 feet apart.

(*a*) Plants tied to stakes 5 feet long and at least 1½ inches in diameter; side shoots pinched out as they appeared, 25 plants of each variety.

Sunnybrook Earliana	63¼ lb. green.
Bonny Best	64½ lb. green.

(*b*) Plants tied to three stout wires, the first 15 inches from the ground, the second 18 inches above the first, and the third 18 inches above the second; 25 plants of each variety.

Sunnybrook Earliana	21 lb. green.
Bonny Best	31¼ lb. green.

(*c*) Plants tied to stakes and half foliage removed; 25 plants of each variety.

Sunnybrook Earliana	1¾ lb. ripe.
	16 lb. green.
	17¾ lb. total.
Bonny Best	1½ lb. ripe.
	15 lb. green.
	16½ lb. total.

(*d*) Plants tied to stakes and no foliage removed; 25 plants of each variety. (Same result as "*a*.")

3. Plants pruned to 2 stems and tied to stakes and wires; 25 plants of each variety.

(*a*) Tied to stakes 5 feet long—

Sunnybrook Earliana	11 lb. ripe.
	101 lb. green.
	112 lb. total.
Bonny Best	56 lb. green.

(*b*) Tied to wires 4½ feet high—

Sunnybrook Earliana	10 lb. ripe.
	63 lb. green.
	73 lb. total.
Bonny Best	3 lb. ripe.
	94 lb. green.
	97 lb. total.

(*c*) Tied to stakes and half foliage removed—

Sunnybrook Earliana	1 lb. ripe.
	14 lb. green.
	15 lb. total.
Bonny Best	29 lb. green.

(*d*) Tied to stakes and no foliage removed. (Same result as "*a*.")

NAPPAN.

4. An experiment conducted to ascertain the more suitable method of starting plants, whether in pots or flats. The same two varieties were used and 25 plants of each set. Following is the weight of green fruit.

	Pots.	Flats.
Sunnybrook Earliana	34 lb.	60 lb.
Bonny Best	14 lb.	43½ lb.

5. Different methods of ripening fruit.

(*a*) Placed in the sun—

Ripe	100	per cent.
Green	...	"

(*b*) Put in shade in a moderately warm place—

Ripe	79	per cent.
Green	21	"

(*c*) Put in closed box without ventilation—

Ripe	98	per cent.
Green	2	"

(*d*) Hanging plants up in a moderately warm building.

Ripe	92	per cent.
Green	8	"

CAULIFLOWER.

The following experiments to determine the most efficient method of controlling the root maggot in cauliflower were conducted. Twenty-two plants each of Early Dwarf Erfurt and Snowball varieties were used and were planted 18 inches apart in rows 30 inches apart.

1. Plants entirely unprotected—

Early Dwarf Erfurt	no yield.
Snowball	27¾ lb.

2. Plants protected with tar felt paper discs—

Early Dwarf Erfurt	11¼ lb.
Snowball	20 lb.

3. Plants protected by a covering of cheese cloth—

Early Dwarf Erfurt	11¾ lb.
Snowball	16½ lb.

CABBAGE.

The same experiments were conducted with cabbage as with cauliflower, Early Jersey Wakefield and Copenhagen Market being the varieties used. The following results were obtained:—

1. Plants unprotected—

Early Jersey Wakefield	6½ lb.
Copenhagen Market	18 lb.

2. Tar felt paper discs used—

Early Jersey Wakefield	41 lb.
Copenhagen Market	33 lb.

3. Cheese cloth protection used—

Early Jersey Wakefield	77½ lb.
Copenhagen Market	33 lb.

NAPPAN.

CARROTS.

Thinning experiments with the Chantenay variety of carrots were conducted to determine if possible the proper distance at which to grow them. To this end they were planted in rows 30 inches apart and were thinned to 1½, 2, and 3 inches. One hundred feet of row was taken and the following yields obtained:—

Thinned to 1½ inches	31 lb.
" 2 "	42 lb.
" 3 "	47 lb.

BEETS.

A similar experiment with beets was conducted, the variety Early Model being used, and the plants thinned to 2, 3, and 4 inches apart. With a 100-foot row the yields were:—

Thinned to 2 inches	31 lb.
" 3 "	32 lb.
" 4 "	20 lb.

PARSNIPS.

An exactly similar experiment with parsnips, Hollow Crown variety, resulted in:

Thinned to 2 inches	25 lb.
" 3 "	30 lb.
" 4 "	40 lb.

In all of the vegetable cultural experiments the effects of the season and other reasons prevent the drawing of any definite conclusions. The experiments will be continued for the next few years after which some reliable and valuable conclusions should be drawn.

POTATOES.

Experiments were conducted with seventeen varieties of potatoes in duplicate plots. These were located in the commercial orchard. The land was a medium clay loam, which received an application of barnyard manure at the rate of 20 tons per acre. Sets were planted 12 inches apart in rows 30 inches apart. Each plot occupied 1/100 of an acre. The potatoes were planted on June 19 and harvested on September 29. During the season they received four cultivations and two hoeings.

The following results were obtained:—

Potatoes.—Test of Varieties.

	Variety.	1st plot yield per acre.		2nd plot yield per acre.		Average yield per acre.	
		Bush.	lb.	Bush.	lb.	Bush.	lb.
1	Wee McGregor	321	40	341	40	331	40
2	Carman No. 1	270		306	40	228	20
3	Irish Cobbler	295		328	20	311	40
4	Rawlings Kidney	298	20	278	20	283	20
5	King Edward	235		296	40	265	50
6	Morgan Seedling	266	40	266	40	266	40
7	Late Puritan	313	20	258	20	285	50
8	Empire State	298	20	241	40	270	
9	Early Rose	228	20	291	40	260	
10	Rochester Rose	255		283	20	269	10
11	Dalmeny Beauty	150		188	20	169	10
12	Everett	311	40	328	20	320	
13	Reeves Rose	258	20	305		281	40
14	Vick Extra Early	308	20	316	40	312	20
15	Green Mountain	320					
16	Bugless and Blightless	261	40				
17	Gold Coin	278	20	258	20	268	20

Nappan.

FIELD LOTS OF POTATOES.

In order to supply at a reasonable rate a limited amount of good seed potatoes to farmers wishing to obtain same it was decided to grow a half acre each of Irish Cobbler and Green Mountain. The following is the amount of each available for seed purposes:—

Date of planting.	Area.	Variety.	Amount.	
			Bush.	lb.
June 19	½ acre.	Irish Cobbler.	158	45
June 19	½ acre.	Green Mountain	139	21
		Total	298	7

ELITE STOCK.

The work of improving the strain of six varieties of potatoes by field selection was continued during the season. The varieties were the same as for the previous year, namely, Irish Cobbler, Carman No. 1, Wee McGregor, Empire State, Rawlings Kidney and Green Mountain.

The method of selection was to have all hills dug separately and then twenty-five of the best hills collected and weighed. All hills chosen had a high percentage of marketable potatoes of proper size. For comparison the average for all hills was taken and the following results were obtained:—

No.	Name of variety.	Selected Hills.	Average for all hills.
		lb.	lb.
1	Irish Cobbler	34·5	28·8
2	Wee McGregor	36·0	21·0
3	Carman No. 1	34·0	16·6
4	Empire State	36·0	21·0
5	Rawlings Kidney	37·0	24·7
6	Green Mountain	41·0	19·4

This selection will be continued by the same method next year.

FLOWERS.

A change in our perennial border was effected this season. The old border had been established a number of years and had practically outgrown its usefulness. The more desirable varieties were transferred to the new border which was laid off in a semi-circle, and many new species obtained from Ottawa were planted. Notwithstanding the lateness of the season at which the transfer was made, all plants made excellent growth and considerable bloom was shown.

The annuals and such bulbs as dahlias, gladioli, etc., were judiciously intermingled with the perennials, and a most attractive display resulted. Much better results are expected this coming season, however.

In the centre of the border, and leading to the large lawn beyond, an arch is being erected which will be covered with climbing roses. At either end flowering and evergreen shrubs are being planted, and the whole effect should be most pleasing.

A variety test of sweet peas was made this season, about 108 varieties being planted. The lateness of the season prevented these being planted sufficiently early to obtain good results. Consequently no definite conclusions can be drawn.

Several new lawns were prepared and seeded during the summer and fall, including a grass tennis court on the site of an old shed. This ground was graded, levelled and rolled and a good catch of lawn seed obtained. The following mixture was used, 28 pounds Kentucky blue and 45 pounds of timothy to the acre.

ORNAMENTAL TREES AND SHRUBS.

Considerable thinning out of our ornamental and flowering shrubs was made this year which resulted in a stronger vegetative growth and more abundant bloom. Many of these have been out a number of years and are now approaching maturity. A few new shrubs and a large number of roses were planted. The following were the varieties obtained and all apparently went into the winter in good shape:—

ROSES.

- 3 Hansa.
- 2 Blanc double de Coubert.
- 3 Persian Yellow.
- 3 Wm. Lobb.
- 3 Blanche Moreau.
- 6 Hugh Dickson.
- 6 Margaret Dickson.
- 5 Baron Rothschild.
- 3 Abel Carriere.
- 3 Mme. Chas. Wood.
- 3 Geo. Arends.
- 3 Mme. Caroline Testout.
- 5 Dorothy Perkins.
- 3 Mme. Geo. Bruant.
- 3 Conrad F. Myers.
- 3 Harrison Yellow.
- 3 Salet.
- 6 Mrs. John Laing.
- 3 General Jacqueminot.
- 5 Frau Karl Druschki.
- 2 Alfred Colomb.
- 3 Magna Charta.
- 3 John Hooper.
- 6 J. B. Clark.
- 7 Crimson Rambler.
- 2 American Pillar.

SHRUBS.

- 30 *Spiraea Van Houttei.*
- 30 *Spiraea arguta.*
- 30 Lilacs, assorted,
    - 10-*alba grandiflora.*
    - 10-*Condorcet.*
    - 10-*Geo. Bellair.*
- 3 Weigela, Eva Rathke.
- 30 Mock Orange, assorted,
    - 15-*Grandiflorus.*
    - 15-*Boquet Blanc.*
- 6 *Crataegus Crus-galli.*

The hedges made their usual strong growth necessitating constant attention. The common spiraea hedge was removed as it was getting so large it was seriously interfering with those alongside of it.

EXPERIMENTAL STATION, KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT, W. SAXBY BLAIR.

This is the fourth annual report of the horticultural work carried on at this Station and covers such experiments as it is thought are sufficiently advanced to be of value. Some additional fruit trees were planted during the past season and the orchard that it is proposed to plant has been practically completed. A list of the orchard fruits is given in this report. Trials were continued this season with vegetables of different kinds, a report of some of which is given herewith. The annual and perennial flowering plants and bulbs made their usual attractive show. The experimental orchard work was continued at Berwick, Kings county; Falmouth, Hants county; and Bridgetown, Annapolis county, a report of which is given.

The fruit crop on the average was not of high quality. The season was particularly favourable for apple scab and the weather was unsuitable for effective spraying resulting in much of the fruit going into the number three pack. The crop, where persistent and thorough spraying was done, packed out well. The apple crop was about two-thirds an average yield. Owing to the high freight rates the exported fruit did not net the growers as much as that disposed of locally.

The past winter has been a severe one on peach trees, and they have killed back considerably. Shrubs not very hardy have also killed back some. Strawberries came through the winter in excellent condition.

THE WEATHER.

Owing to a low uniform temperature throughout the latter part of April and the first week in May the fruit trees remained practically dormant. The mean average temperature for the last half of April, first and last halves of May and first half of June were 39·4, 43·76, 48·37 and 56·7 degrees Fahr., respectively, as compared with 41·2, 43·04, 57·5 and 54·26 degrees for 1914, and with 47·93, 44·73, 47·97 and 58·3 degrees for 1913.

Slight frosts occurred on May 7, 11, 14, 15, and 17, when the temperatures recorded were 30, 32, 32, 28 and 28 degrees Fahr., respectively. No frosts were recorded here during the latter part of May and early June when the fruit was in the blossoming stage. Slight frosts were reported from Berwick and Falmouth on June 3, but these were so slight that no damage resulted.

During the second week in May the fruit trees began to put forth their leaves and spraying commenced on May 14. From this date to the end of the month more or less sunshine was recorded each day except on the 16th, 18th, 22nd, and 28th. Rain fell, however, during the day on the 15th, 18th, 19th, 23rd, 27th and 29th, and during the night on the 16th, 19th, 22nd, 24th and 27th. The total precipitation during this period was not great, amounting to only 0·85 inch, of which 0·42 inch fell on the nights of the 19th and 27th. This unsettled weather during the early spraying operations hampered the work very much and much less spraying was done at this time than there would have been had the weather been more favourable. Cherries, plums and strawberries were in full bloom during the last days of May.

The first week in June was bright and free from rain, making conditions ideal for the trees to put forth their blossoms. Gravensteins were in full bloom on June 3, and the winter varieties on June 8. This fair weather of early June was followed by an unusually wet period from June 7 to 25, only five out of these eighteen days being without rain, during which 2·36 inches of rain fell. The weather was dark on the 7th, 8th, 9th and 12th, with fairly bright weather on the 10th and 11th. Rain, however, fell every day and amounted to 1·01 inches of which 0·57 fell on the 9th, and 0·37 on the 12th. After the heavy rain on the 9th, very few blossoms remained on the trees. The petals fell quickly and fruit did not set as well as expected. The varieties Spy, Blenheim, Baldwin and Roxbury Russet (Nonpareil), showing a very poor set. The poor set was probably due to imperfect pollination.

This unfavourable weather for spraying, together with the urgent need of time to finish up the seeding and planting which also had been held up by the backward season, the abundance of fruit bloom, coupled with a general pessimistic feeling among the farmers (resulting from the poor prices received for the fruit the preceding season) that the crop would be a bumper one, that barrels would be high owing to the small stock of stave material got out the preceding winter, that prices would be poor owing to the war conditions, hence, a worthless crop, caused many farmers to neglect their spraying, which resulted in a bad apple scab infection and consequently a low grade of fruit. Farmers that were more optimistic and did their spraying thoroughly were rewarded for their diligence and expense by getting exceptionally good prices for their output, due partly to the small apple crop and partly to their high class of fruit in comparison to the low class that resulted from unsprayed orchards. Orchards that received four thorough applications of spray at the proper time were, in spite of the unfavourable weather, free from scab.

The rainfall for June, July and August was 7·79 inches as compared with 8·32 inches in 1914 and 6·65 inches in 1913. The precipitation this year was well distributed, and no crops suffered from drought.

The month of September was unusually bright, giving a fruit of high colour. Gravensteins were picked on September 15. The month was free from frost except for two degrees on the 26th. This gave corn and other tender vegetable crops an excellent chance to mature. A strong westerly gale on the 26th and 27th did considerable damage to the winter varieties.

As most of the precipitation occurred during the night and the sun shone on all but six days, October was an ideal month for gathering the fruit and vegetable crops. The fruit crop proved lighter than expected and the month closed with practically all the crops harvested.

November was mild and open until the last, giving the farmers ample time to do their fall ploughing. Frost prevented ploughing on the morning of the 18th, 19th and 24th of the month only, which is very unusual. December opened with a snowfall of 5 inches which quickly went off, and little snow fell again until the 31st, when a fall of 6 inches made excellent sleighing. The month was unusually mild, the mean average temperature being 29·14 degrees as compared with 22·89 for the same period in 1914, and 23·44 for 1913. There was little frost in the ground at the close of the month.

A thaw on the 5th of January took off the snow and the ground was bare during the greater part of the month. Light flurries of snow gave sleighing during the 19th, 20th and 21st, but this went off with a thaw on the 22nd. The lowest temperature was 4 degrees below on the 18th.

After the early part of February the month was cold throughout. The lowest temperature was on the 14th, 15th, 16th, 20th, 21st and 22nd, when 1, 19, 8, 1, 4 and 7 degrees Fahr. below zero, respectively, were recorded. Frequent falls of snow throughout the month made fairly good sleighing. There was one heavy thaw during the month which was on the 26th and 27th when 1·14 inches of rain fell, causing a considerable freshet.

March has been unusually stormy and the snowfall was heavy, aggregating 40·5 inches. Twelve inches of snow on the 4th drifted badly and delayed train traffic. On the 15th and 16th, 12·25 inches fell. At the time this caused little trouble, but, as the weather remained cold, this, with 9 inches of snow on the 23rd accompanied by heavy winds, blocked roads and tied up train traffic for several days. This was followed by mild weather on the 26th, which continued to the end of the month, resulting in a gradual disappearance of the snow without a freshet. The only rain was on the 26th of 0·01 inch. The coldest period was 2 degrees below zero on the 19th.

METEOROLOGICAL RECORDS.

Months.	Temperature F.					Precipitation.					Bright Sunshine.
	Maximum.		Minimum.		Mean.	Rainfall.		Snowfall.		Total.	
1915	Date	Deg.	Date.	Deg.	Deg.	Days.	Ins.	Days.	Ins.	Ins.	Hours.
April	4–20	64	9	21	39·36	13	1·15	2	5·5	1·70	107·4
May	10	71	17–19	28	46·14	16	2·24	1	2·6	2·50	160·9
June	8	81	3	33	56·8	14	2·43	....	....	2·43	180·2
July	11	82	7–11	46	64·0	9	1·52	....	....	1·52	215·7
August	12–25	81	29	42	63·8	13	3·84	....	....	3·84	168·3
September	9–17	83	26	30	57·25	11	·85	....	....	·85	194·0
October	13–14	72	16	28	49·05	14	3·88	....	....	3·88	171·1
November	2	61	24	22	39·15	18	2·81	....	....	2·81	65·5
December	26	54	31	6	29·14	11	2·34	6	15·3	3·87	56·4
1916.											
January	22	51	18	–4	23·25	7	·65	11	11·5	1·8	93·4
February	26	49	15	–19	18·77	7	1·51	13	26·5	4·16	60·3
March	30	55	19	–2	22·09	1	·01	11	40·5	4·06	120·4
Total annual	......	......	......	......	....	....	23·23	....	101·9	33·42	1,593·6

APPLES.

The apple trees planted 40 by 40 feet apart comprise twenty trees each of Banks (Red Gravenstein), Ben Davis, Yellow Bellflower (Bishop Pippin), Crimson Beauty, Cox Orange, Duchess, Fallawater, Fameuse, Gano, Golden Russet, Hubbardston, Milwaukee, Roxbury Russet (Nonpareil), Ontario, Tolman, Wellington, Yellow Transparent, Baxter, Dudley (North Star), Red Astrachan, Wolf River, and Rome Beauty; also sixty-two Baldwin, forty Blenheim, forty Rhode Island Greening, forty Ribston, fifty-four Stark, forty Northern Spy, forty Tompkins King, 176 McIntosh Red and 133 Wealthy. Seventy-four trees Walbridge have also been planted for top grafting work.

In addition to this there are 163 varieties of apples planted using two trees of a variety. In a dwarf plantation thirty-six apples are on Doucin stock, thirty-six on Paradise, twenty-five on English Paradise, and ten on French Paradise stock. A special fertilizer block includes four varieties of thirty trees each. This makes a total of 219 varieties of standards composed of 2,509 trees and eight varieties of dwarf apples of 107 trees. This makes 227 varieties and a total of 2,616 trees planted.

PLUMS.

The plums planted so far number 92 varieties. Two trees of a kind have been set of most varieties, but in addition to these, larger blocks of Monarch, Giant Prune, Reine Claude, Diamond, Burbank, and Red June have been set. The total plum trees planted number 367 trees.

CHERRIES.

The cherry plantation includes fifty-four varieties and two trees have been planted of a kind except Black Tartarian, Windsor and Montmorency, of which larger blocks have been set, making a total of 154 cherry trees.

PEACHES.

The peach plantation includes forty-seven varieties made up principally of two trees of a kind. The total peach trees number 106.

PEARS.

The pear plantation is composed of fifty-five varieties of two trees of a kind. In addition larger plantations have been made of Bartlett, Doyenne du Comice, Clapp Favourite and Beurre Clairgeau including 113 trees. This makes a total of 223 pear trees planted.

APRICOTS AND QUINCES.

Five varieties of apricots are growing and seven varieties of quinces, making a total of twenty-three trees. The quince rust was noticed this season on some of the quince trees.

TOTAL ORCHARD FRUITS PLANTED.

	Varieties.	Number of Trees.
Apples..	227	2,616
Plums..	92	367
Cherries..	54	154
Peaches..	47	106
Pears..	55	223
Apricots and Quince..	12	23
Total..	487	3,489

The total area in orchard fruits is 46·7 acres.

FILBERT NUTS.

Of the twenty-four varieties of filbert nut trees planted, eighteen are growing. Many of the plants have failed to make much growth, and of the 240 plants set only eighty-eight are now growing. The plants set were two-year layered stock and the loss is not due to lack of hardiness but rather to low vitality in the stock due to the long shipment from France. Older and better rooted stock should be used.

LETTUCE.

Ten varieties of lettuce were started under glass, and the same varieties were started in the field in the spring of 1914. The plants from seeds started under glass were pricked out into flats 2 inches apart. These plants were later set in the field by cutting out a square of soil with each plant. The early seeded plants were well hardened off by placing them in a cold frame for a week before setting out and suffered little check from the transplanting. This practice enables one to secure lettuce a month earlier than if the seed is started in the open ground. The same practice was followed in 1915 except that the plants were started later, and a duplicate set of plots was seeded in the open ground. The outside seeded plants made fair growth and were ready for market about one month later than plants started under glass; they were, however, very uneven from not having been thinned to a proper distance apart, and records of the weight of heads were not secured. It is very important that the plants be thinned early to 6 inches apart in the row if good marketable heads are to be secured.

Lettuce plants started under glass if well hardened off can be set in the open ground as early as the ground can be prepared. The seed should be sown 5 weeks before planting out to secure well-developed plants. Lettuce seed should be sown in the field as early as the ground can be worked and the earlier the seeding the earlier will marketable heads be obtained.

The two varieties Red edged Victoria and Rousseau Blond were not satisfactory and went to seed early. The All Heart variety is very compact and does not go to seed as quickly as some of the other varieties. Hanson Improved is also a fine variety of good quality. The Iceberg and Giant Crystal Head form a large head but are not as compact as the other. These are all cabbage head varieties and are considered desirable in the order named. The Grand Rapids is the best open head variety.

The following table gives the time of planting, when fit for market, and the average weight per head:—

Variety.	Date of sowing.	Date of pricking out.	When planted to field.	When fit for Market and average weight per head.		
	1914.				lb.	oz.
Grand Rapids	Mar. 28	April 14	May 9	July 2	1	3
Grand Rapids	May 14			Aug. 4	..	15
Hanson Improved	Mar. 28	April 14	May 9	July 2	1	2
Hanson Improved	May 14			Aug. 5	..	13
Simpson, Black Seeded	Mar. 28	April 14	May 9	June 27	..	15
Simpson, Black Seeded	May 14			Aug. 5	1	..
Iceberg	Mar. 28	April 14	May 9	June 27	1	..
Iceberg	May 14			Aug. 5	..	15
All Heart	Mar. 28	April 14	May 9	June 27	..	15
All Heart	May 14			July 28	..	13
Giant Crystal Head	Mar. 28	April 14	May 9	July 2	1	5
Giant Crystal Head	May 14			Aug. 5	1	6
Dark Green Capucine	Mar. 28	April 14	May 9	July 18	1	4
Dark Green Capucine	May 14			Aug. 5	1	2
Unrivalled	Mar. 28	April 14	May 9	July 2	..	14
Unrivalled	May 14			Aug. 5	..	11
Red Edged Victoria	Mar. 28	April 14	May 9	July 2	..	13
Red Edged Victoria	May 14					
Rousseau Blond	Mar. 28	April 14	May 9	July 2	..	10
	1915.					
Grand Rapids	Apr. 5	Apr. 17	May 10	June 29	10	3
Hanson Improved	" 5	" 17	" 10	" 29	10	..
Simpson, Black-Seeded	" 5	" 17	" 10	" 29	8	..
Iceberg	" 5	" 17	" 10	" 29	9	5
All Heart	" 5	" 17	" 10	" 29	7	7
Giant Crystal Head	" 5	" 17	" 10	" 29	6	8

EARLY CABBAGE.

Five varieties of early cabbage were seeded on March 25 and April 15, in flats in the greenhouse, and these were later transplanted into flats on April 10 and April 27, and set in the open ground May 8 and June 10. The lot set in the open ground on

June 10 should have been planted two weeks earlier but the planting was unavoidably delayed. The table given below is of interest in that it shows up the respective merits of the three principal early varieties. Copenhagen Market, Paris Market, and Early Jersey Wakefield for early market purposes. The Copenhagen Market while somewhat later in developing makes a much better head than either of the other two. The Copenhagen Market head is round and is liked much better than the Paris Market or Early Jersey Wakefield both of which are of the oxheart type. For the very early market it seems that the selected Early Jersey Wakefield is advisable, but, considering everything, it would appear that for general purposes the Copenhagen Market is the best.

For early cabbage there is a great advantage in having plants well developed and well hardened off in a cold frame for setting in the ground as early as possible. The planting in the open ground should not be delayed after the ground can be worked, and a frost, if the plants have been properly hardened off, will not do any injury. The early set cabbage for the first two weeks do not show growth in foliage but the roots meanwhile are becoming well established and when better growing weather approaches they develop into marketable heads rapidly.

Owing to the root maggot it is almost impossible to grow early cabbage without protecting the plants by using the tar felt disc which is fitted around the plant right after it is set. This disc is a piece of tar paper about 2½ inches in diameter with a slit cut in half-way and a small cross slit of about half an inch to enable it to fit as a collar with the plant in the centre of the disc. It should be fitted carefully about the plant on the surface of the ground in order to give the desired protection. This prevents the fly from depositing the eggs on the soil at the base of the plant from which the maggots hatch. Plants protected with these discs during the past season were 89 per cent marketable, and those not protected 27 per cent marketable.

EARLY CABBAGE.

Variety.	Seed sown.	First. ready for use.	When harvested.	Average weight per head.	
				lb.	oz.
Copenhagen Market	Mar. 28	July 22	July 24, Aug. 5	4	1
Copenhagen Market	April 15	Aug. 20	Aug. 31, Sept. 12	4	3
Paris Market	Mar. 28	July 7	July 10, 16 and 24	2	1
Paris Market	April 15	Aug. 10	Aug. 10, 21 and 28	1	6
Early Jersey Wakefield	Mar. 28	July 8	July 11, 16 and 24	2	1
Early, Jersey Wakefield	April 15	Aug. 10	Aug. 13, 21 and 28	2	..
Erfurt Small	Mar. 28	July 25	July 25, Aug. 5	2	4
Erfurt Small	April 15	Aug. 20	August 22	1	14
Summer Ballhead	Mar. 28	Aug. 9	Aug. 15 and 28	4	5
Summer Ballhead	April 15	Sept. 3	Sept. 8, 9 and 14	4	12

LATE CABBAGE.

For late cabbage it is not necessary to start the plants early, in fact plants set late in the open ground escape the root maggot and for that reason very many grow only late cabbage. There is also much less work attached to the growing of late cabbage. The plants are started in a cold frame, in good garden soil, the last week in April or first week in May. The seed is sown thinly in rows 4 to 6 inches apart so that the ground can be worked between the rows. Care is taken to give proper ventilation during the day and the frames are covered at night. As the season advances a cheesecloth protection is spread over the frames to prevent the fly of the root maggot from entering. These plants, if given proper attention develop into thrifty plants which are set out about the middle to the last of June. It has been found that for early heads the Copenhagen Market is one of the best when grown in this way. Any of the Drumhead varieties make large heads on proper soil by the time winter approaches. The Danish Roundhead, a variety having a round compact head of excellent quality is one of the best for winter storage.

LATE CABBAGE.

Variety.	Seed sown.	Planted.	First ready for use.	Average weight of heads.	
				lb.	oz.
Copenhagen Market	May 13	July 13	Sept. 15	5	12
Summer Ballhead	" 13	" 13	" 15	4	2
Improved Brunswick	" 13	" 13	Oct. 10	5	
Large Late Flat Drumhead	" 13	" 13	" 10	5	13
Danish Roundhead	" 13	" 13	" 10	4	11

ONIONS.

Four varieties of onions were started in flats in the greenhouse March 24. The flats used were shallow boxes holding soil 2½ inches deep. The seed was scattered broadcast moderately thick, and covered to a depth of a quarter inch. A fairly rich garden soil was used. The plants were a fair size only when planted out on May 10.

To grow good plants at least eight weeks is required for growth in the flats and the seed should be started early in March. Plants can be started in such flats in a good sunny kitchen window. It is not a good plan to carry the plants at a high temperature, as they grow more rapidly but the plants are liable to be weak and spindly, whereas the low temperature plants are much more stocky and thrifty. As the plants grow in the flats the temperature should be gradually lowered. Good plants for transplanting cannot be produced by forcing the seedlings and it is much better to start the seed early, thus giving plenty of time for developing suitable plants.

The plants were well hardened off in a cold frame before planting, and set in rows 15 inches apart and 4 inches apart in the rows.

The soil on which these were grown was of medium fertility having been manured the two previous years with 20 tons of stable manure per acre. The land was in cabbage the previous year. The manure, which was well rotted, was applied in the fall and ploughed under. In the spring this was worked up with the disc and spring tooth harrow and acid phosphate at the rate of 400 pounds, and nitrate of soda at the rate of 150 pounds per acre were applied. Onions like a rich soil with plenty of early available plant food; poor soils will not give satisfactory returns.

Seed was also sown in the open ground as early as the ground could be worked, May 10, but the crop did not mature. It seems almost impossible to grow a profitable crop of onions under our climatic and soil conditions from seed sown in the open ground. On very rich soils it may be possible but certainly here it has been a failure during the past two years. The reason is that the plants do not make sufficient early growth to bring them to maturity early in September, and as the cool fall weather with rains comes on, the plants continue to grow and do not mature. The Extra

Early Red and Yellow Globe Danvers are the two best maturing varieties from seed planted in the field.

It would seem, therefore, that the practice of starting the onion seed in flats and transplanting the plants outside early is the only satisfactory method of onion culture for this country. The plants are easily raised and a great number can be grown in a small flat. The expense of transplanting is not much greater than the expense of thinning, and the plants can be transplanted with less loss than any of the vegetable plants. It should be remembered, however, that good thrifty plants stand transplanting much better than small spindling ones, and that good plants to start with can be secured only by starting the seed early. The plants should be ready for setting out as early as the ground can be worked so that the plants can get well established early in the spring. The following table gives the yield of four varieties grown during the past season from transplanted plants started as indicated above. The Prizetaker is one of the best onions for growing in this way. The plots were each one row 66 feet long.

Variety.	Well matured.		Not well maturedbut marketable.		Not marketable.		Total marketable per acre.	
	lb.	oz.	lb.	oz.	lb.	oz.	bush.	lb.
Extra Early Red	38	8	7	8	6	8	404	48
Yellow Globe Danvers	28	8	15	8	0	0	440	4
Large Red Wethersfield	28	8	16	12	4	4	398	12
Mammoth Prize Taker	19	4	33	8	0	8	464	10

Two varieties of onions were included in a test in 1914 to determine how best to handle the plants before setting in the open ground. Two lots of each were transplanted into flats in the greenhouse, one inch apart. The others were not transplanted except in the open ground, and one lot was sown February 3, another February 28, and the other March 17. The following table gives information regarding this test. The plants were set in the open ground on May 9. They were set in rows 15 inches apart and 6 inches apart in the row except the plants started February 3, which were planted 1 foot apart in the row. The crop was harvested September 25.

Variety.	Seed started.	When transplanted into flats.	Number of bulbs grown	Weight of bulbs.	Average weight of bulbs.
				lb.	oz.
Prize Taker	Feb. 3	Mar. 2	94	145	24·5
Prize Taker	“ 28	“ 30	44	44	16·0
Prize Taker	“ 28		37	26	11·0
Prize Taker	Mar. 17		63	33	8·3
Ailsa Craig	Feb. 3	Mar. 2	98	142	23·2
Ailsa Craig	“ 28	“ 30	42	36	13·6
Ailsa Craig	“ 28		49	30	9·7
Ailsa Craig	Mar. 17		27	27	6·0

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GARDEN PEAS FOR SEED.

Five varieties of garden peas were planted for seed production May 18, in plots of one-fifteenth acre each. These were seeded with the grain drill at the rate of 2½ bushels per acre. The soil on which these were planted was of medium fertility and had been in corn in 1915. The ground was fertilized with ground limestone at the rate of 1 ton per acre and 400 pounds of acid phosphate per acre. The yield was as follows:—

	Yield per acre.	
	Bush.	Lb.
Excelsior	11	24
Thomas Laxton	13	30
Gradus	13	—
Admiral Dewey	13	45
Stratagem	10	15

FIELD BEANS.

Two varieties of field beans were planted May 26, in plots of one-sixth acre each. The seed was sown with the hand drill in rows 30 inches apart.

The land had previously been in corn and was fertilized with 400 pounds of acid phosphate per acre. The soil is a sandy loam of medium fertility.

The crop ripened well and was fit for harvesting September 21. The following yields per acre were obtained:—

	Bush.	Lb.
Common Yellow-eye	14	12
White Kidney	16	30

POTATOES.

TEST OF VARIETIES.

The ground on which the different varieties of potatoes were planted was in potatoes in 1913 and corn in 1914, having been manured for the corn at the rate of 15 tons stable manure per acre. The land was ploughed in the fall after the corn was cut, and it was again ploughed this spring. It was fertilized with 600 pounds acid phosphate, 200 pounds nitrate of soda and 100 pounds of muriate of potash per acre.

The planting was done May 20 and the crop was dug September 24. The seed was planted in rows 33 inches apart and one foot apart in the rows. The plants were cultivated five times, and poisoned Bordeaux mixture was used three times. The poisoned Bordeaux used was made up of 4 pounds bluestone and 4 pounds lime to 40 gallons water, to which was added one-half pound Paris green and 1½ pounds arsenate of lead to 40 gallons.

The plants on the majority of the plots seemed to lack in vigour. The disease rhizoctonia noticeably weakened many of the plants and in some cases as a result the plants died prematurely. There was no loss from late blight. The season on the whole was not entirely favourable for potatoes and the crop in general was light. The results obtained are given in the following table:—

Potatoes—Test of Varieties.

Name.	Marketable.	Not marketable.	Total Yield.
	Bushels per acre.	Bushels per acre.	Bushels per acre.
Todd Wonder	236	10	246
Sir Walter Raleigh	200	24	224
Clyde	154	38	192
Manistee	157	34	191
New Queen	146	32	178
Silver King	132	32	164
Rawlings Kidney	126	34	160
Dobbie Prolific	144	14	158
Carman No. 1	128	22	150
Vicks	120	28	148
Early Rose	118	27	145
Empire State	118	26	144
Irish Cobbler	86	58	144
Dreer Standard	117	27	144
Wee McGregor	114	24	138
Burbank	118	16	134
Wonderful	108	24	132
Vermont Gold Coin	112	20	132
McIntyre	92	34	126
Early Hebron	100	24	124
Eureka Extra Early	62	60	122
Green Mountain	86	34	120
New Scotch Rose	96	24	120
Early White Albino	92	22	114
Up-To-Date	90	20	110
Dalmeny Hero	68	25	93
Early Ohio	75	18	93
Bliss Triumph	55	37	92
Pan American	62	26	88
McCullough	58	25	83
Black Kidney	28	52	80
Bovee	64	16	80
Early Norther	46	30	76
Acquisition	40	34	74
Snow	44	24	68
Morgan Seedling	46	20	66
Factor	38	18	56
Table Talk	18	32	50
Conquering Hero	26	23	49
Scottish Triumph	30	12	42

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HALF-ACRE PLOTS OF GREEN MOUNTAIN AND DELAWARE POTATOES.

One-half acre plots of Green Mountain and Delaware potatoes were planted on new ground June 1. The land was manured with 15 tons stable manure per acre, which was ploughed under. Acid phosphate at the rate of 400 pounds per acre was also applied. These made a very strong growth. The plants were sprayed three times with poisoned Bordeaux mixture July 13, July 20 and August 6. There was no blight. The crop was dug September 24. The yield per acre was as follows:—

	Marketable.		Not Marketable.		Total Yield.	
Name.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
Delaware..	187	20	26	40	213	40
Green Mountain..	181	..	27	20	208	20

IRISH COBBLER AND GREEN MOUNTAIN.

Two one-half acre plots of Irish Cobbler and Green Mountain were planted on a piece of ground that had been in potatoes the two previous years. The reason for using this land was that there was no other land available. The land was in corn in 1913 on which no stable manure was used and it was fertilized for the corn at the rate of 400 pounds complete fertilizer per acre and gave a crop of only 4 tons, 100 pounds ensilage corn per acre. This same land was in potatoes in 1914, having been fertilized with 600 pounds of complete fertilizer per acre containing 4 per cent nitrogen, 8 per cent phosphoric acid and 5 per cent potash, and produced 137 bushels potatoes per acre. The ground was fall ploughed after the potatoes were dug and in the spring of 1915 again ploughed after which 600 pounds acid phosphate, 200 pounds nitrate of soda and 100 pounds of muriate of potash per acre were scattered broadcast and harrowed in before planting. The seed was planted in rows 33 inches apart and one foot apart in rows. The plants were well cultivated and sprayed three times with poisoned Bordeaux.

The crop on this field was a complete disappointment. The trouble seemed to be largely due to rhizoctonia which prevented the plants from making a vigorous growth and they maintained a stunted dwarf appearance and prematurely dried up. The yield per acre was as follows:—

Name.	Marketable. Bushels. Per acre.	Not Marketable. Bushels. Per acre.	Total Yield Bushels. Per acre.
Irish Cobbler..	41	20	61
Green Mountain..	75¾	18	93¾

POTATOES CUT IN DIFFERENT WAYS.

In order to find out the value of cutting seed tubers into pieces having one or more eyes, tests were made with Empire State and Table Talk. The whole potatoes averaged 36 bushels seed planted per acre; 1-eye pieces, 17 bushels; the 2-eye pieces, 24 bushels; the 3-eye pieces, 36 bushels; and the ordinary planting, 18 bushels per acre. The 1-eye pieces averaged 1 ounce to a set; the 2-eye pieces 1½ ounces; and the 3-eye pieces, 2 ounces to a set. The seed was planted 1 foot apart in the row and the rows were 33 inches apart.

The land on which these tests were made had not previously been in potatoes. It was manured at the rate of 15 tons stable manure per acre and acid phosphate at the rate of 400 pounds per acre was scattered broadcast and harrowed in before planting.

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The yields from these tests are given in the following table:—

—	Yield per Acre.		
	Marketable.	Unmarketable.	Total Yield.
	Bushels	Bushels	Bushels
Table Talk, cut the same as field lots	168	40	208
" cut to 1 Eye	180	34	214
" cut to 2 eyes	194	50	244
" cut to 3 eyes	214	42	256
" whole small to medium potatoes	122	46	168
Empire State, cut same as field lots	156	18	174
" cut to 1 eye	154	18	172
" cut to 2 eyes	212	30	242
" cut to 3 eyes	184	30	214
" whole small to medium potatoes	216	28	244

POTATOES PLANTED DIFFERENT DISTANCES APART.

In order to find out whether close planting is advisable a series of tests was made in planting potatoes in rows 2½ and 3 feet apart and in planting the sets 12 and 14 inches apart in the row. The land was similar to that in which the tests with seed cut in different ways were conducted. The yield per acre from these tests is given in the following table:—

	Marketable.		Unmarketable.		Total Yield.	
	Bush.	lb.	Bush.	lb.	Bush.	lb.
Green Mountain, 12 inches by 2½ feet	207	45	36	15	244	
Irish Cobbler, " " " "	189		38	30	227	30
Green Mountain, 14 " " "	208	30	37		245	30
Irish Cobbler, " " " "	200		37		237	
Green Mountain, 12 " 3 "	176		25	40	201	40
Irish Cobbler, " " " "	112		25	40	137	40
Green Mountain, 14 " 3 "	183	20	22		205	30
Irish Cobbler, " " " "	128	20	27	30	155	50

GARNET CHILI POTATOES FROM DIFFERENT SOURCES.

In order to find out whether a variety of potatoes as grown by different farmers if brought together and given uniform conditions will produce equally well, a series of tests was conducted with the Garnet Chili potato. The crop was planted on land manured with 15 tons stable manure and 400 pounds acid phosphate per acre.

The different lots were given similar treatment in every way and were in rows adjoining each other. It will be noticed that there was a marked difference in the yield and this difference seemed largely to centre around the vigour of the plant, enabling them to resist the rhizoctonia disease, which was present in the soil, and the development of which the season seemed to favour. These same potatoes will be tested again next season. The results obtained are given in the table below.

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GARNET CHILI POTATOES FROM DIFFERENT GROWERS.

Number of grower.	Marketable.	Unmarketable.	Total.
	Bushels per acre.	Bushels per acre.	Bushels per acre.
1	220	20	240
2	94	26	120
3	212	14	226
4	186	20	206
5	26	10	36
6	32	14	46
7	176	34	210
8	52	22	74

SWEET PEA.

Sweet peas grow well on the ordinary garden soil provided it is drained so that water will not lie on the surface after heavy spring rains. A sunny location should be chosen. Plants grown in a shady situation are usually weak and produce few flowers. A close bright situation with little air circulation, where the plants are subject to the extreme midday heat of summer, should be avoided. The sweet pea likes a cool moist soil during the summer and every effort should be put forward to furnish these conditions if good bloom is to be secured.

The ground used for these flowers at Kentville, which is a sandy loam, is prepared by trenching to a depth of 12 inches and about 15 inches wide. The top 6 inches of soil is kept separate from the subsoil. Into this trench 5 inches of manure is scattered and this is worked over a little by mixing it with about half of the subsoil removed, after which the manure and soil is packed somewhat by tramping. The surface soil is then put on about 4 inches deep and this is mixed with some well rotted fine manure. Two ounces of ground limestone, 1 ounce of slag, and 1 ounce of bone meal is then added to each yard of trench and well worked into the soil. The seed is then planted by running out a drill about 2 inches deep and the seed is covered about one inch.

As the plants develop earth is gradually worked up around the plants until the trench is filled level, and as the summer heat becomes great a mulch of litter, or strawy horse manure, is placed each side of the row of plants. This holds the moisture and keeps the roots cool on our light soils.

Tests have been made during the past two years of plants started in pots in the greenhouse and planted out as compared with those started in the open ground. For this work four varieties have been used, King Edward Spencer (Red), King White (White), Countess Spencer (Pink), and Tennant Spencer (Lavender). Beatrice Spencer (White), was used in place of King White in 1914. These are five excellent varieties.

Ten 4-inch pots of each variety were seeded with from 5 to 6 seeds and the plants were later thinned out to three plants to a pot. When set to the open ground the earth in which the plants were growing was not broken, thus preventing any check in growth, and the contents of each pot were placed one foot apart in the row, the top about one inch below the surface. The plants were well hardened off by allowing them to remain in the cold frame and in the open a week before planting. The early sown plants were about 7 to 8 inches high and the later sown ones 5 to 6 inches high when set out. In order to support the plants in the pots small twigs are stuck into the soil. It will be seen that this method of getting early bloom is one well worth recommending and the work attached to it is not very great. The plants grown in pots were set in the open ground on May 4, in 1914, and on May 11 in 1915, on the same dates that the seed of those grown entirely outside was sown. The date of planting and date of bloom is given in the following table:—

Variety. 1914.	When started in pots.	Set to the open ground.	Date of first Bloom.
Beatrice Spencer	March 18	May 4	July 6
King Edward Spencer	" 18	" 4	" 7
Countess Spencer	" 18	" 4	" 8
Tennant Spencer	" 18	" 4	" 4
Beatrice Spencer	April 1	" 4	" 12
King Edward Spencer	" 1	" 4	" 10
Countess Spencer	" 1	" 4	" 12
Tennant Spencer	" 1	" 4	" 12
	Planted in the open ground.		
Beatrice Spencer	May 4		" 25
King Edward Spencer	" 4		" 25
Countess Spencer	" 4		" 25
Tennant Spencer	" 4		" 25
1915.	When planted in pots.		
King White	March 27	May 11	" 1
King Edward Spencer	" 27	" 11	" 6
Countess Spencer	" 27	" 11	" 1
Tennant Spencer	" 27	" 11	" 6
King White	April 13	" 11	" 10
King Edward Spencer	" 13	" 11	" 12
Countess Spencer	" 13	" 11	" 13
Tennant Spencer	" 13	" 11	" 12
	Planted in the open ground.		
King White	May 11		August 3
King Edward Spencer	" 11		" 3
Countess Spencer	" 11		" 3
Tennant Spencer	" 11		" 2

In addition to the five varieties of sweet peas named above the following twelve sorts were considered the best out of sixty-five varieties tested: King Manoel, rich maroon; Mrs. Townsend, white-edged blue; Mrs. C. W. Breadmore, buff edged rose; Captain of the Blues, blue; Mrs. Hugh Dickson, cream salmon pink; Helen Lewis, orange salmon pink; Elfrida Pearson, pale pink; Clara Curtis, primrose; Senator, chocolate stripes; Asta Ohn, lavender overlaid with rose; Thomas Stevenson, orange scarlet; and Maud Holmes, crimson.

SHRUBS.

The various shrubs planted in the spring of 1913 and 1914 have become well established and have made sufficient growth to add much to the attractiveness of the ground. The growth is not very rapid on the poor light sandy soil on which these are growing, but after they become established there is no advantage in forcing the growth provided they remain healthy and vigorous, for a small healthy shrub is as attractive as a large one. The following list includes varieties which we can recommend as suitable for home planting, owing to their hardiness, and attractiveness of foliage, bloom, or fruit:—

Japanese Barberry (*Berberis Thunbergii*).
Siberian Pea Tree (*Caragana arborescens*).
Red-stemmed Dogwood (*Cornus alba Sibirica*).
Japanese Quince (*Cydonia japonica*).
Weeping Golden Bell (*Forsythia suspensa*).
Golden Bell (*Forsythia Fortunei*).
Japanese Hydrangea (*Hydrangea paniculata grandiflora*).
Yellow-flowering Currant (*Ribes aureum*).
Japanese Rose (*Rosa rugosa*).
Golden Elder (*Sambucus aurea*).
Cut-leaved Elder (*Sambucus nigra laciniata*).
Bridal Wreath Spiraea (*Spiraea Van Houttei*).
Dwarf Bridal Wreath Spiraea (*Spiraea arguta*).
Spiraea Anthony Waterer (*Spiraea Bumalda Anthony Waterer*).

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Bush Honeysuckle (*Lonicera tatarica rubra*).
Bush Honeysuckle (*Lonicera Morrowi*).
Sweet Mock Orange (*Philadelphus coronarius*).
Large-flowered Mock Orange (*Philadelphus grandiflorus*).
Smoke Bush (*Rhus Cotinus*).
Golden Spiraea (*Spiraea opulifolia aurea*).
Snowberry (*Symphoricarpus racemosus*).
Common Snowball (*Viburnum Opulus sterile*).
High Bush Cranberry (*Viburnum Opulus*).

EVERGREENS.

The evergreens planted at this Station have made very indifferent growth, but are now getting established and are commencing to add appreciably to the beauty of the grounds. The following are particularly desirable:—

Colorado Blue Spruce (*Picea pungens*).
Stone Pine (*Pinus Cembra*).
Dwarf Mountain Pine (*Pinus montana Mughus*).
Savin Juniper (*Juniperus Sabina*).
Thread-leaved Cypress (*Retinospora pisifera filifera*).
Plume-like Cypress (*Retinospora pisifera plumosa*).
Hovey's Arborvitæ (*Thuya occidentalis Hoveyi*).
Pyramidal Arborvitæ (*Thuya occidentalis pyramidalis*).
Compact Arborvitæ (*Thuya occidentalis compacta.*)
Siberian Arborvitæ (*Thuya occidentalis Wareana*).

STRAWBERRIES.

Four varieties of strawberries were tested in one-twentieth acre plots. The plants were set May 14, in the spring of 1914. The ground was manured with 15 tons well rotted manure per acre in the spring and ploughed under. Five hundred pounds of complete fertilizer per acre was scattered broadcast and harrowed in before planting. The plants were set in rows 4 feet apart and 1 foot apart in the row. The yield from these plots is given in the table below.

	First Picking.	Last picking.	Date of largest picking.	Yield per acre boxes.
Pocomoke	July 6	July 26	July 16	5,575
Senator Dunlap	" 6	" 22	" 14	4,660
Sample	" 6	" 28	" 16	4,420
Stevens Late Champion	" 10	" 31	" 22	3,148

VALUE OF PLANTING GOOD STRONG STRAWBERRY PLANTS.

In order to test the value of using strong well-developed strawberry plants two one-fortieth-acre plots were planted at the same time. The plants in plot 1 were the best ones available and those on plot 2 were the small runner plants from the same plot which had developed late the previous season. The results would seem to show that every effort should be made to use only the best developed year-old plants for setting out a new plantation.

Plot 1 from large well developed plants, 5,177 boxes.
Plot 2 from small plants, 2,245 boxes.

EXPERIMENTAL ORCHARD WORK.

Experiments were continued this season at Berwick, Falmouth, and Bridgetown in the same orchards used for this work two preceding years. The experiments have for the most part been confined to apple scab control, using both the lime-sulphur and soluble sulphur to which lead arsenate had been added for insect control.

The object of the experiments is to clear up certain points in connection with the time of application for the best control of apple scab and from the results it would appear that the greatest loss to growers has been caused from early scab infection due to not giving close enough attention to the early sprays before blossoming. It seems very desirable to give one thorough spray just after the leaves are nicely out and another before the blossoms open. Thorough work at this time is of utmost importance in order properly to protect the foliage from disease.

There seems to be no advantage in using a dormant spray. A slight reduction of apple scab apparently followed the dormant application in many instances but the difference between the plots where the dormant spray was used, and the regular without the dormant spray is so little that it would not be of economic advantage. It also appears that there is no advantage in using a strength greater than the regular 1·008 specific gravity test. The practice of making the early sprays stronger than the regular summer spray does not seem to be necessary for scab control.

A number of tests have been made with the soluble sulphur as compared with lime-sulphur and the results are rather conflicting. The control of scab was fairly good at Bridgetown and Falmouth, but was not satisfactory at Berwick. It would appear that soluble sulphur does not adhere to the foliage as well as lime-sulphur and heavy rains following soon after the application may very materially lessen the effectiveness of the spray and cause burning.

The foliage injury resulting from the soluble sulphur when combined with arsenate of lead renders this spray quite unsatisfactory. As pointed out last season the neutral leads do cause less burning than the acid leads but the amount of burning with neutral leads is too great to make the question of kind of arsenate of lead a factor of great consequence. It would seem that some quite different insecticide will have to be used with soluble sulphur before it can be considered a satisfactory spray.

Different preparations put in the soluble sulphur arsenate spray to eliminate the foliage injury have improved the spray somewhat in this regard, but are not considered to be of sufficient value to be of practical use.

It would appear from what can be gathered up to the present that four thorough applications of lime-sulphur-arsenate, two sprays before blossoms and two after will prove the most satisfactory and ensure practically clean fruit with little foliage injury. With much dark damp weather during the spraying period or following a thorough application some injury is liable to result from lime-sulphur but this injury usually is only very slight. The injury seems in every case to be due to the combination formed from the arsenate of lead and sulphur compounds when the two are mixed together and these compounds after they have dried on the trees are influenced again apparently by the weather following the application.

I am indebted to my assistant Mr. R. D. L. Bligh for the records secured at Berwick and Falmouth, and to Mr. M. P. Pike for the records obtained at Bridgetown. We have made every effort to avoid error in the work and have duplicated the experiments at each orchard as much as possible.

In considering these results it should be kept in mind that we depend entirely upon the hydrometer test in making our lime sulphur sprays. Were all brands of commercial concentrated lime-sulphur of the same density this would be unnecessary, but there may be a variation in density of from 1·26 to 1·30 in this product in which case a gallon of the 1·26 specific gravity concentrate if added to 40 gallons would give a much weaker spray than if one gallon of the 1·30 specific gravity concentrate is added to 40 gallons. The method to follow is to first test the concentrate one is using.

We were using the Grasselli concentrated lime-sulphur which gave 1·30 specific gravity test. In order to find out the dilution required for a spray of 1·008 density the decimal of this spray is divided into the decimal concentrate thus:—

$$\frac{(1)\cdot 300}{(1)\cdot 008} 37\tfrac{1}{2} \text{ gallons.}$$

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or one gallon should be diluted to make 37½ gallons of spray. If a concentrate has 1·26 specific gravity test and a 1·008 spray is desired you would proceed as follows: $\frac{(1)\cdot260}{(1)\cdot008}$ 32½ gallons of spray, or 1 gallon should be diluted to make 32½ gallons of spray. Any reference made as to the dilution in this report is based on the specific gravity test of the Grasselli concentrated lime-sulphur.

The approximate date of full bloom at the different orchards was as follows:—

Variety.	Bridgetown.	Berwick.	Falmouth
Gravenstein..	June 4	June 3	June 6
Golden Russet..	" 6	" 8	" 10
Tompkins King..	" 6	" 6	" 8
Baldwin..	" 9	" 8	—
Blenheim..	" 7	" 8	—
Stark..	" 6	" 8	—
Ben Davis..	" 10	" 10	—
Ribston..	" 6	" 6	" 8
Roxbury Russet (Nonpareil)..	" 8	......	—
Northern Spy..	" 10	" 10	" 12

The dates of application have varied somewhat at the different orchards, but in all comparative tests the sprays were applied on the same days. In the majority of the tests two sprays were put on before the blossoms and two after.

It is interesting to note that from the 15th May when first spraying work at Berwick started there was more or less sunshine every day to the end of the month except on the 16th, 18th, 22nd, and 28th. Rain fell the 15th, 16th, 18th, 19th, 22nd, 23rd, 24th, 27th, and 29th, the total precipitation however was only 0·85 inch, of which 0·42 fell on the nights of the 19th and 27th. It will be seen, therefore, that the weather to June 1, was fairly favourable for scab development. From the 1st to the 6th June, inclusive, the weather was unusually bright and unfavourable for scab development and favourable for blossoming. This was followed by dark weather on the 10th and 11th. Rain fell on four days following the 8th, which amounted to 1·01 inches, over half of which fell on the 9th, when the blossoms were at their best, after which they soon disappeared. It will be seen that the time during the latter part of the blooming period was particularly favourable for scab development. The next two weeks following the 11th June was more or less dark, with rain on eight days.

It will be noticed that the greatest foliage injury occurred when rain and dark weather followed the application of the spray, and also that the soluble sulphur plots showing the greatest per cent scab were those which had a rather sharp fall of rain the day following the application which would seem to indicate that soluble sulphur is less adhesive than lime sulphur.

The orchards used are fairly well matured and three trees have been used to each experiment. The aim has been to make comparative tests with trees which have been developed under apparently similar conditions and adjoining each other, and for this reason there may be some difference in the results from the same spray on the different series of plots. In every case the product of the plot has been carefully sorted and the percentage of slight, medium, and bad scab obtained. In many cases the per cent of scab was only slight, which fact is not shown in the total per cent here given. It has been noticed that plots adjoining the check plots often show a decidedly high per cent of scab, and this is what we might expect. Plots for a check, however, left unsprayed are necessary in order to check up the work.

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DORMANT VERSUS NO DORMANT SPRAY.

Experiments were continued this season to get further information as to the value of the dormant spray put on before the buds open to control scab. Different strengths of lime-sulphur were used in these early sprays and the results would seem to show some gain, although the gain is not sufficient to make this a necessary spray. It will be noticed that the per cent of scab from nine plots is 7·13 per cent and that this does not include two plots at Bridgetown where there was 36 and 21 per cent of scab. These two plots were high in scab owing to being adjacent to a plot not sprayed, which resulted in a light late infection, and were these included the average would be 11·51 per cent scab on the plots receiving other than dormant spray.

It will also be noticed that tests have been made with varying strengths of lime-sulphur for the first spray with the three following sprays similar. It would appear from this that there is no advantage in using a strength greater than that generally used for summer for this spray. The plot where the 1·010 strength was used was also adjacent to a check plot and the high per cent of scab in it can in this way be accounted for. The results would seem to confirm previous experiments that the dormant spray is of little value and that a strength of spray greater than 1·008 is unnecessary.

VALUE OF THE DORMANT SPRAY.

Place where test made and variety.	Time of application.					Per cent Scab.
Berwick	April 26	May 17	June 1	June 15	July 2	
Gravenstein	1·014	1·008	1·008	1·008	1·008	12·4
"		1·008	1·008	1·008	1·008	16·2
Not sprayed						91·0
Ben Davis	1·014	1·008	1·008	1·008	1·008	3·7
"		1·008	1·008	1·008	1·008	4·5
Not sprayed						75·3
			May 31	June 14	July 1	
Tompkins King	1·032	1·008	1·008	1·008	1·008	2·1
"	1·014	1·008	1·008	1·008	1·008	·3
"	1·008	1·008	1·008	1·008	1·008	2·3
"		1·008	1·008	1·008	1·008	7·7
Not sprayed						92·8
	April 27					
Gravenstein	1·032	1·008	1·008	1·008	1·008	6·1
"	1·014	1·008	1·008	1·008	1·008	4·5
"	1·008	1·008	1·008	1·008	1·008	8·4
"		1·008	1·008	1·008	1·008	10·1
Not sprayed						87·4
Bridgetown	April 28	May 17	May 28	June 15	June 25	
Gravenstein	1·028	1·008	1·008	1·008	1·008	8·0
"		1·008	1·008	1·008	1·008	21·0
"		1·010	1·008	1·008	1·008	11·
Not sprayed						98·0
		May 18	May 28	June 15	June 26	
Gravenstein	1·028	1·008	1·008	1·008	1·008	8·5
"		1·008	1·008	1·008	1·008	36·0
Not sprayed						93·2
Tompkins King	1·028	1·008	1·008	1·008	1·008	8·04
"		1·008	1·008	1·008	1·008	6·47
Not sprayed						57·18
Ben Davis	1·028	1·008	1·008	1·008	1·008	6·83
"		1·008	1·008	1·008	1·008	8·07
Not sprayed						73·61
Roxbury Russet (Nonpareil)	1·028	1·008	1·008	1·008	1·008	3·77
" "		1·008	1·008	1·008	1·008	3·44
Not sprayed						42·0
Stark	1·028	1·008	1·008	1·008	1·008	6·77
"		1·008	1·008	1·008	1·008	8·62
Not sprayed						62·71
Berwick		May 19	June 8	June 18	July 1	
Spy		1·014	1·008	1·008	1·008	3·6
"		1·009	1·008	1·008	1·008	3·55
"		1·008	1·008	1·008	1·008	4·47
"		1·007	1·008	1·008	1·008	4·29
Not sprayed						95·2

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Dormant versus no Dormant.

Number of Experiments.	Summary.	Per cent. Scab.
2 Dormant spray....	1·932 sp. gr., or 1 to 9½ gals. and four sprays 1·008................	4·1
6 " "	1·028 " 1 " 10½ " " 1·008................	7·4
4 " " ..	1·014 " 1 " 21 " " 1·008................	5·2
2 " " ...	1·008 " 1 " 37 " " 1·008................	5·3
9 No Dormant spray	....1·008................	7·13
11 No spray.........	....	78·95

Different Strengths in the first Foliage Spray.

1 First foliage spray	1·014 sp. gr., 1 to 21 gals. and three sprays1·008.................	3·6
1 " "	1·010 " 1 " 30 " " 1·008.................	11·0
1 " "	1·009 " 1 " 37 " " 1·008.................	3·5
1 " "	1·008 " 1 " 37 " " 1·008.................	9·5
1 " "	1·007 " 1 " 43 " " 1·008.................	4·9
	Average of above five sprays „ 1·008.................	6·5
7 No first foliage spray.		13·94
11 No spray.		78·95

SPRAYING AT DIFFERENT DATES.

In order to gather further information as to the value of the early sprays as compared with the later ones a series of tests in which the plots were sprayed twice before, and twice after the blossoms, were compared with those sprayed once before the blossoms and twice after.

In one series of experiments the one spray before the blossoms was put on about midway between the first spray, which was put on just after the leaf buds were nicely opened May 17, and the second spray put on just before the first petals opened May 31, or just before or about the time the blossom clusters were showing pink, this we have called a midway spray.

In the other test the one spray before blossoms was put on just before the petals of the flower clusters opened.

It will be noticed from the summary of the lime-sulphur-arsenate plots below that there was a difference of from two to three per cent only in favour of two sprays before the blossoms and that the two most important sprays were the ones just before and just after blossoming. From results obtained it would seem that should the period between the opening of the leaf buds and the opening of the petals of the flower clusters be short owing to weather conditions one spray may be sufficient to give practically clean fruit, but should this period be extended two sprays should be given.

A study of results from the soluble sulphur plots sprayed at different dates as shown by the summary indicates that the early spray was quite an important one and that two applications before the blossoms were advisable. It is interesting to note also, that on the day following the application of the midway spray at Berwick there was a sharp rainfall of about one-quarter inch as was the case with the spray after blossoming which would show that soluble sulphur is not an adhesive spray and that a heavy quick rainfall may reduce its fungicidal value and bring about increased burning also, as was the case with these sprays.

It would seem, therefore, that from our present knowledge it is wise to make two applications before blossoms; first after the leaf buds open, and second just before the blossoms open which dates correspond with those advised for the best control of insects.

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SPRAYING AT DIFFERENT DATES.

Place where test made and Variety.	Time of application.					Per cent of Scab.
Berwick—	May 17	May 26	May 31	June 14	July 2	
Gravenstein	1·008		1·008	1·008	1·008	10·1
"			1·008	1·008	1·008	14·30
"		1·008		1·008	1·008	15·2
"				1·008	1·008	31·3
"					1·008	88·7
" no spray						87·4
Tompkins King	1·008		1·008	1·008	1·008	7·7
"		1·008		1·008	1·008	10·3
" no spray						92·8
			June 1	June 15		
Gravenstein	1·008		1·008	1·008	1·008	16·8
"		1·008		1·008	1·008	24·2
" no spray						91·0
Ben Davis	1·008		1·008	1·008	1·008	3·1
"		1·008		1·008	1·008	3·49
" no spray						75·3
Twenty Ounce	1·008		1·008	1·008	1·008	0·6
"		1·008		1·008	1·008	0·8
Ribston	1·008		1·008	1·008	1·008	1·9
"		1·008		1·008	1·008	3·3
Stark	1·008		1·008	1·008	1·008	5·5
"		1·008		1·008	1·008	4·2
" no spray						70·5
Falmouth—	May 24	May 26	June 4	June 25	July 13	
Northern Spy	1·008		1·008	1·008	1·008	0·67
"			1·008	1·008	1·008	3·0
" no spray						51·4
Golden Russet	1·008		1·008	1·008	1·008	3·0
"			1·008	1·008	1·008	2·9
" no spray						34·2
Tompkins King	1·008		1·008	1·008	1·008	0·7
"		1·008		1·008	1·008	2·5
" no spray						31·1
Bridgetown—	May 17	May 24	May 28	June 15	June 25	
Gravenstein	1·008		1·008	1·008	1·008	21·0
"			1·008	1·008	1·008	30·0
"		1·008		1·008	1·008	29·0
" no spray						98·0
	May 18	May 28	June 15	June 26		
Gravenstein	1·008	1·008	1·008	1·008		36·0
"		1·008	1·008	1·008		25·7
" no spray						93·2
Tompkins King	1·008	1·008	1·008	1·008		6·47
"		1·008	1·008	1·008		7·86
" no spray						57·18
Stark	1·008	1·008	1·008	1·008		8·62
"		1·008	1·008	1·008		6·58
" no spray						62·71
Ben Davis	1·008	1·008	1·008	1·008		8·07
"		1·008	1·008	1·008		8·79
" no spray						73·61
Roxbury Russet (Nonpareil)	1·008	1·008	1·008	1·008		3·44
" "		1·008	1·008	1·008		4·33
" " no spray						42·00

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Soluble Sulphur Applied at Different Dates.

Place Where Test Made and Variety.	Time of application.					Per cent of Scab.
Berwick	May 17	May 26	June 1	June 15	July 2	
Gravenstein	1½-½-100		1½-½-100	1½-½-100	1½-½-100	31·5
Tompkins King	1½-½-100		1½-½-100	1½-½-100	1½-½-100	8·8
Baldwin	1½-½-100		1½-½-100	1½-½-100	1½-½-100	0·0
Golden Russet	1½-½-100		1½-½-100	1½-½-100	1½-½-100	13·2
Average of four varieties						13·4
Gravenstein		1½-½-100		1½-½-100	1½-½-100	40·8
Tompkins King		1½-½-100		1½-½-100	1½-½-100	37·7
Baldwin		1½-½-100		1½-½-100	1½-½-100	17·1
Golden Russet		1½-½-100		1½-½-100	1½-½-100	17·8
Average of four varieties						28·1
	May 17	May 27	May 31	June 14	July 2	
Gravenstein	1½-½-100		1½-½-100	1½-½-100	1½-½-100	47·6
"			1½-½-100	1½-½-100	1½-½-100	47·0
"		1½-½-100		1½-½-100	1½-½-010	45·4
" No spray						87·4
Falmouth		May 24	June 4	June 25	July 13	
Gravenstein		1½-½-100	1½-½-100	1½-½-100	1½-½-100	8·9
Northern Spy		1½-½-100	1½-½-100	1½-½-100	1½-½-100	4·2
Golden Russet		1½-½-100	1½-½-100	1½-½-100	1½-½-100	7·8
Average of three varieties						6·9
Gravenstein			1½-½-100	1½-½-100	1½-½-100	25·7
Northern Spy			1½-½-100	1½-½-100	1½-½-100	18·4
Golden Russet			1½-½-100	1½-½-100	1½-½-100	21·3
Average of three varieties						21·4
Gravenstein, no spray						43·2
Northern Spy, no spray						51·4
Golden Russet, no spray						32·2
Average of three varieties						42·9

SPRAYS APPLIED AT DIFFERENT DATES.

SUMMARY.

Number of Experiments.	Lime-Sulphur 1·008 Specific Gravity or One gallon Concentrate to make 37 gals. spray and 5 lbs. Arsenate of Lead to 100 gallons.	Per cent of Scab.
16	Two before and two after blossoms	8·35
9	One before blossoms, midway between first and second and two after blossoms	11·48
9	One just before and two after blossoms	10·33
1	Two after blossoms only	31·30
1	One two weeks after blossoms	88·70
14	No spray	68·6
	Soluble Sulphur 1½ lbs. and 5 lbs. Arsenate of lead to 100 gallons.	
8	Two before and two after blossoms	16·8
5	One before blossoms, midway between first and second and two after blossoms	36·7
4	One just before and two after blossoms	34·2
4	No spray	65·1

SOLUBLE SULPHUR VERSUS LIME SULPHUR.

A number of tests have been made with soluble sulphur-arsenate of different strengths to compare with lime-sulphur-arsenate for apple scab control and the results as given in the summary would go to show that the scab control was slightly better at Falmouth with lime-sulphur-arsenate than with soluble sulphur-arsenate; at Berwick the control was decidedly better with lime-sulphur-arsenate, and at Bridgetown the soluble sulphur-arsenate gave the best control. As already pointed out the first spray after blossoming at Berwick was followed the next day with sharp rain which may have washed off some of the spray resulting in the large percentage of scab shown.

Arsenate of lead at the rate of five pounds per 100 gallons was used in each spray. Two sprays were given before and two after blossoming.

SOLUBLE SULPHUR *versus* LIME SULPHUR.

Where Test made and variety.	Time of application.					Per cent Scab.
Berwick		May 17	May 31	June 14	July 2	
Gravenstein	S.S.	1½-100	1½-100	1½-100	1½-100	42·0
“	“	2½-100	2½-100	2½-100	2½-100	36·7
“ no spray						87·4
“	L.S.	1·008	1·008	1·008	1·008	10·1
Falmouth		May 24	June 4	June 25	July 13	
Gravenstein	S.S.	1½-100	1½-100	1½-100	1½-100	6·4
“	“	2 -100	2 -100	2 -100	2 -100	4·7
“	“	2½-100	2½-100	2½-100	2½-100	6·3
“ no spray						43·3
Northern Spy	S.S.	1½-100	1½-100	1½-100	1½-100	0·0
“	“	2 -100	2 -100	2 -100	2 -100	2·2
“	“	2½-100	2½-100	2½-100	2½-100	2·1
“ no spray						51·4
“	L.S.	1·008	1·008	1·008	1·008	·67
Golden Russet	S.S.	1½-100	1½-100	1½-100	1½-100	8·9
“	“	2-100	2 -100	2 -100	2 -100	4·0
“	“	2½-100	2½-100	2½-100	2½-100	4·5
“ no spray						34·2
“	L.S.	1·008	1·008	1·008	1·008	3·0
Bridgetown		May 18	May 28	June 15	June 26	
Gravenstein	S.S.	1½-100	1½-100	1½-100	1½-100	34·4
“ no spray						93·2
“	L.S.	1·008	1·008	1·008	1·008	36·0
King	S.S.	1½-100	1½-100	1½-100	1½-100	7·0
“ no spray						57·18
“	L.S.	1·008	1·008	1·008	1·008	6·47
Stark	S.S.	1½-100	1½-100	1½-100	1½-100	4·07
“ no spray						62·71
“	L.S.	1·008	1·008	1·008	1·008	8·62
Ben Davis	S.S.	1½-100	1½-100	1½-100	1½-100	2·37
“ no spray						73·61
“	L.S.	1·008	1·008	1·008	1·008	8·07
Nonpareil	S.S.	1½-100	1½-100	1½-100	1½.100	2·34
“ no spray						42·0
“	L.S.	1·008	1·008	1·008	1·008	3·44

SOLUBLE SULPHUR versus LIME-SULPHUR.

SUMMARY.

Number of Experiments.	—	Per cent Scab.
3	Soluble-sulphur 1½ lbs. to 100 gals.... Falmouth	5·1
3	" 2 " 100 "	3·6
3	" 2½ " 100 "	3·3
2	Lime-sulphur 1·008 specific gravity	1·84

Berwick.

1	Soluble-sulphur 1½ lbs. to 100 gals	42·00
1	" 2½ " 100 "	36·70
1	Lime-sulphur 1·008 specific gravity	10·10

Bridgetown.

5	Soluble-sulphur 1½ lbs. to 100 gals	10·3
5	Lime-sulphur 1·008 specific gravity	12·52

KENTVILLE.

DIFFERENT QUANTITIES OF SOLUBLE SULPHUR.

In order to find out whether a strength of soluble sulphur greater than that advised, which is 1½ pounds to 100 gallons, will give a better control of scab, or increase the foliage injury, a series of tests were made at Berwick on Gravenstein, and at Falmouth on Gravenstein, Spy and Golden Russet. Five pounds of arsenate of lead was used per 100 gallons in each spray. The sprays were applied at the same date under uniform conditions.

It will be noticed that the fungicidal value of the spray was not materially increased by a strength greater than that recommended and that the stronger sprays are likely to cause increased foliage injury.

Spray used at Berwick on Gravenstein.	Per cent Scab.
Soluble sulphur 1½ lbs., Barium chloride ½ lb. to 100 gals	47·6
" 2 " " ½ " 100 "	84·2
" 2½ " " ½ " 100 "	42·2
" 3 " " ½ " 100 "	49 2
No spray	73·4

	Spray used at Falmouth.	
Gravenstein	Soluble sulphur 1½ lbs. to 100 gals	6·4
Northern Spy	" 1½ " 100 "	0·0
Golden Russet	" 1½ " 100 "	8·9
	Average of three varieties	5·1
Gravenstein	Soluble sulphur 2 lbs. to 100 gals	4·7
Northern Spy	" 2 " 100 "	2·2
Golden Russet	" 2 " 100 "	4·0
	Average of three varieties	3·6
Gravenstein	Soluble sulphur 2½ lbs. to 100 gals	6·3
Northern Spy	" 2½ " 100 "	2·1
Golden Russet	" 2½ " 100 "	4·5
	Average of three varieties	4·3
Gravenstein	No spray	43·2
Northern Spy	"	51·4
Golden Russet	"	34·2
	Average of three varieties	42·9
Gravenstein	Soluble sulphur 1½ lbs., BaCL2 ½ lb. to 100 gals	8·9
Northern Spy	" 1½ " " ½ " 100 "	4·2
Golden Russet	" 1½ " " ½ " 100 "	7·8
	Average of three varieties	6·9
Gravenstein	Soluble sulphur 2 lbs., BaCL2 ½ lb. to 100 gals	4·7
Northern Spy	" 2 " " ½ " 100 "	4·2
Golden Russet	" 2 " " ½ " 100 "	9·2
	Average of three varieties	6·0
Gravenstein	Soluble sulphur 2½ lbs., BaCL2 ½ lb. to 100 gals	9·2
Northern Spy	" 2½ " " ½ " 100 "	4·5
Golden Russet	" 2½ " " ½ " 100 "	12·8
	Average of three varieties	8·8

EXPERIMENTS WITH BARIUM CHLORIDE ADDED TO SOLUBLE SULPHUR TO LESSEN FOLIAGE INJURY.

When the foliage injury resulting from the use of soluble sulphur in the orchard experiments in 1914 was reported to the agent for the soluble sulphur compound we were told that it had been used too strong. The directions given on the container were followed in our 1914 tests. These directions, I may say were considerably modified on containers of this product put out later. It was also suggested that barium chloride added to the soluble sulphur arsenate spray at the rate of one-half pound to 100 gallons would entirely eliminate the burning of the foliage. The several tests conducted to determine the value of barium chloride would go to show that there is on the whole some slight advantage from its use, but that the advantage is more than offset by the added cost. It does not, by any means make soluble sulphur arsenate a safe spray. Barium chloride costs 50 cents per pound, and as chloride of lime gives better results and costs only 15 cents per pound it seems unnecessary to experiment further with this substance.

The injury caused by the soluble sulphur arsenate spray is evidently due to the combination formed when arsenate of lead is added to the soluble sulphur solution. This is shown in our tests conducted at Berwick and given further on under the heading "Dry and Paste Arsenate of Lead with Lime and Soluble Sulphur."

We are now advised that arsenate of lime when used with soluble sulphur in place of arsenate of lead gives a 'spray that causes little if any injury. We have not tried arsenate of lime, but judging from our results with chloride of lime, which no doubt produces a somewhat similar combination when added to the soluble sulphur arsenate of lead spray, it may prove to be a satisfactory poison.

Five pounds of arsenate of lead was used in these sprays and the quantity of soluble sulphur varied from 1½ pounds to 100 gallons to 2½ pounds to 100 gallons. The results at Bridgetown would show quite an advantage from the use of barium although it does not by any means eliminate the burning. Where the half-pound was used to the 1½ pounds of soluble sulphur, quite a gain is shown at Berwick, but that this quantity of barium chloride is of no value where the 2 or 2½ pounds of soluble sulphur is used to 100 gallons is shown by the Berwick and Falmouth experiments. The Falmouth tests show 25 per cent gain however from the Barium chloride added to the spray of 1½ pounds soluble sulphur to 100 gallons, over the plots on which barium chloride was not used, but there was considerable burning about equal to that of Berwick on the plots where the barium chloride was added.

Value of Barium Chloride to Lessen Foliage Injury.

Where Test Made and variety.		Per cent Scab.	Foliage Injury.
	Spray used four times to each plot.		
Berwick			
Gravenstein	Soluble sulphur 1½ lbs. Barium ½ lb. to 100 gals...............	47·6	12·
“	Soluble sulphur 1½ lbs. to 100 gals..............................	42·	55·
“	Soluble sulphur 2½ lbs., Barium ½ lb. to 100 gals...............	42·2	64·
“	Soluble sulphur 2½ lbs. to 100 gals..............................	36·7	60·6
Falmouth..........	No Spray..	73·4	
Gravenstein........	Soluble sulphur 1½ lbs. Barium ½ lb. to 100 gals.............	8·9	32·
Northern Spy......	“ 1½ “ ½ “ 100 “	4·2	26·
Golden Russet.....	“ 1½ “ ½ “ 100 “	7·8	30·
	Average of three varieties..	6·9	29·3
Gravenstein........	Soluble sulphur 1½ lbs. to 100 gals..............................	6·4	37·
Northern Spy......	“ 1½ “ 100 “	0·0	39·
Golden Russet.....	“ 1½ “ 100 “	8·9	39·
	Average of three varieties..	5·06	35·
Gravenstein........	Soluble sulphur 2 lbs. Barium ½ lb. to 100 gals...............	4·7	41·
Northern Spy......	“ 2 “ ½ “ 100 “	4·2	43·
Golden Russet.....	“ 2 “ ½ “ 100 “	9·2	36·
	Average of three varieties..	6·03	40·
Gravenstein........	Soluble sulphur 2 lbs. to 100 gals................................	4·7	48·
Northern Spy......	“ 2 “ 100 “	2·2	47·
Golden Russet.....	“ 2 “ 100 “	4·0	40·
	Average of three varieties..	3·6	45·
Gravenstein........	Soluble sulphur 2½ lbs. Barium ½ lb. to 100 gals.............	9·2	45·
Northern Spy......	“ 2½ “ ½ “ 100 “	4·5	44·
Golden Russet.....	“ 2½ “ ½ “ 100 “	12·8	30·
	Average of three varieties..	8·8	39·7
Gravenstein........	Soluble sulphur 2½ lbs. to 100 gals..............................	6·3	46·
Northern Spy......	“ 2½ “ 100 “	2·1	41·
Golden Russet.....	“ 2½ “ 100 “	4·5	34·
	Average of three varieties..	4·3	40·3
Gravenstein........	No spray..	43·2	
Northern Spy......	“	51·4	
Golden Russet.....	“	34·2	
	Average of three varieties..	42·9	
Bridgetown			
Gravenstein........	Soluble sulphur 1½ lbs. Barium ½ lb. to 100 gals.............	21·4	16·
Tompkins King....	“ 1½ “ ½ “ 100 “	4·41	5·
Stark..............	“ 1½ “ ½ “ 100 “	9·13	5·
Ben Davis.........	“ 1½ “ ½ “ 100 “	9·16	8·
Roxbury Russet (Nonpareil)......	“ 1½ “ ½ “ 100 “	3·22	2·
	Average of five varieties..	9·46	5·6
Gravenstein........	Soluble Sulphur 1½ lbs. to 100 gals..............................	34·4	27·
Tompkins King....	“ 1½ “ 100 “	7·	16·
Stark..............	“ 1½ “ 100 “	4·7	26·
Ben Davis.........	“ 1½ “ 100 “	2·37	18·
Roxbury Russet (Nonpareil)......	“ 1½ “ 100 “	2·34	22·
	Average of five varieties..	10·16	17·

Kentville.

BARIUM Chloride to Lessen Foliage Injury.

SUMMARY.

	Per cent of foliage injury.		
	Berwick.	Bridgetown.	Falmoumouth.
1½ pounds Soluble sulphur, 5 pounds Arsenate of lead and half pound Barium chloride	12	7·	29·3
1½ pounds Soluble sulphur, 5 pounds Arsenate of lead and no Barium chloride	55	21·8	35·
2 pounds Soluble sulphur, 5 pounds Arsenate of lead and ½ pound Barium chloride			40·
2 pounds Soluble sulphur, 5 pounds Arsenate of lead and no Barium chloride			45·
2½ pounds Soluble sulphur, 5 pounds Arsenate of lead and half pound Barium chloride			39·7
2½ pounds Soluble sulphur, 5 pounds Arsenate and no Barium chloride			40·3

Soluble sulphur Arsenate and Barium chloride at Different strengths for scab Control.

SUMMARY.

	Per cent. Scab.		
	Berwick	Falmouth.	Bridgetown.
Soluble sulphur 1½ pounds, Barium chloride half pound	47·6	6·9	9·46
" 1½ " No Barium chloride	42·	5·6	10·16
" 2 " Barium chloride half pound		6·03	
" 2 " No Barium chloride		3·6	
" 2½ " Barium chloride half pound	42·2	8·8	
" 2½ " No Barium chloride	36·7	4·3	
No spray	73·4	42·9	

FOLIAGE INJURY FROM THE SOLUBLE SULPHUR SPRAYS.

In order to find out when the most injury to foliage is likely to take place a close record was kept of the injury resulting from the different sprays. The following table gives the average of twenty experiments conducted at Berwick. It will be seen that the injury to the Gravenstein was about the same from the first, third and fourth spray, and on the King block the greatest injury was done by the first spray. The second spray gave very little injury.

A study of meteorological observations would go to show that the greatest injury took place when rainy weather occurred on the days following the application and that when bright days followed the application as was the case for the week following the spray put on May 31, no injury resulted.

TIME of Foliage Injury.

	Average per cent of Injury.			
	1st. Spray.	2nd. Spray.	3rd. Spray.	4th. Spray.
Gravenstein at Berwick	9·06	0·5	9·2	7·15
Tompkins King at Berwick	23·1	0·0	6·4	0·0

SOLUBLE SULPHUR ARSENATE AND BARIUM CHLORIDE VERSUS LIME-SULPHUR-ARSENATE FOR SCAB CONTROL.

A series of tests was conducted with soluble sulphur 1½ pounds, arsenate of lead, 5 pounds and Barium chloride ½ pound to 100 gallons as compared with the regular lime-sulphur-arsenate of 1·008 sp. gr. or 1 gallon of Grasselli concentrate lime-sulphur which tested 1·30 sp. gr. to 36 gallons water to which was added 5 pounds arsenate of lead to 100 gallons.

An average of the results as given in the summary shows that soluble sulphur arsenate with barium chloride at Berwick and Falmouth did not control scab as well as the lime-sulphur-arsenate, while at Bridgetown the reverse is shown.

Soluble Sulphur and Barium Chloride vs. Lime-sulphur.

Where test made and variety.	Spray used four times on each plot.	Per cent Scab.
Berwick		
Gravenstein	Soluble sulphur 1½ lbs. Barium ½ lb. to 100 gals	31·5
Ben Davis	“ 1½ “ ½ “ 100 “	10·2
Blenheim	“ 1½ “ ½ “ 100 “	·6
Twenty Ounce	“ 1½ “ ½ “ 100 “	5·4
Tompkins King	“ 1½ “ ½ “ 100 “	8·8
Ribston	“ 1½ “ ¼ “ 100 “	13·1
Gravenstein	“ 1½ “ ½ “ 100 “	47·6
Tompkins King	“ 1½ “ ½ “ 100 “	18·0
	Average of eight varities	16·9
Gravenstein	Lime-sulphur 1·008 sp. gr., or 1 to 37 gals	16·8
Ben Davis	“ 1,008 “ 1 “ 37 “	3·1
Blenheim	“ 1·008 “ 1 “ 37 “	0·0
Twenty Ounce	“ 1·008 “ 1 “ 37 “	0·6
Tompkins King	“ 1·008 “ 1 “ 37 “	10·9
Ribston	“ 1·008 “ 1 “ 37 “	1·9
Gravenstein	“ 1·008 “ 1 “ 37 “	10·1
Tompkins King	“ 1·008 “ 1 “ 37 “	7·7
	Average of eight varieties	6·4
Gravenstein	No Spray	91·
Ben Davis	“	75·3
Gravenstein	“	87·4
Tompkins King	“	82·5
	Average of four varieties	84·
Bridgetown		
Gravenstein	Soluble sulphur ½ lb., Barium ½ lb. to 100 gals	21·4
Ben Davis	“ ½ “ ½ “ 100 “	9·16
Tompkins King	“ ½ “ ¾ “ 100 “	4·41
Stark	“ ½ “ ½ “ 100 “	9·13
Roxbury Russet (Nonpareil)	“ ½ “ ½ “ 100 “	3·22
	Average of five varieties	9·46
Gravenstein	Lime-sulphur 1·008 sp. gr., or 1 to 37 gals	36·
Ben Davis	“ 1·008 “ 1 “ 37 “	8·7
Tompkins King	“ 1·008 “ 1 “ 37 “	6·47
Stark	“ 1·008 “ 1 “ 37 “	8·62
Roxbury Russet (Nonpareil)	“ 1·008 “ 1 “ 37 “	3·44
	Average of five varieties	12·64
Gravenstein	No spray	93·2
Ben Davis	“	73·6
Tompkins King	“	57·18
Stark	“	57·71
Roxbury Russet (Nonpareil)	“	42·00
	Average of five varieties	65·74
Falmouth		
Northern Spy	Soluble sulphur 1½ lbs. Barium ½ to 100 gals	4·2
Golden Russet	“ 1½ “ ½ “ 100 “	7·8
	Average of two varieties	6·
Northern Spy	Lime-sulphur 1·008 sp. gr., or 1 to 37 gals	·67
Golden Russet	“ 1·008 “ 1 “ 37 “	3·00
	Average of two varieties	1·83
Northern Spy	No Spray	51·4
Golden Russet	“	34·2
	Average of two varieties	42·8

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SUMMARY.

Number of Tests.	Where test made.	Per cent. Scab.		
		Soluble Sulphur Arsenate and Barium chloride.	Lime Sulphur Arsenate	No. Spray.
8	Berwick	16·9	6·4	84·
5	Bridgetown	9·46	12·64	65·74
2	Falmouth	6·0	1·83	42·8

CALCIUM CHLORIDE ADDED TO SOLUBLE SULPHUR TO PREVENT FOLIAGE INJURY.

For the purpose of comparing the value of calcium chloride (chloride of lime) with barium chloride as a substance suitable for use in a soluble sulphur arsenate spray mixture, to prevent burning of the foliage caused by the combination formed when arsenate of lead is mixed with soluble sulphur, tests similar to these with barium chloride were made only in a much more limited way. The tests were made at Berwick, using three King trees of uniform size to each plot and each were sprayed four times in the same way on the same dates. The plots were carefully examined after each application and the only injury detected was that shown on the plot where one-half pound was used.

This injury was confined entirely to the first spray and no injury could be detected from later sprays. The other plots were entirely free from foliage injury. It would appear that calcium chloride is much more valuable than barium chloride for overcoming soluble sulphur arsenate injury to foliage. Calcium chloride has a commercial value of from 10 to 15 cents per pound. It is a powder and is added to the soluble sulphur arsenate spray in this form. One and one-half pounds of soluble sulphur and 5 pounds Swifts arsenate of lead was used to each 100 gallons of water and to this the various amounts of calcium and barium chloride were added.

Spray used.	Per cent. Scab.	Per cent Foliage Injury.
Soluble Sulphur 1½ pounds, Calcium Chloride ½ pound to 100 gallons.	33·8	20·
" " 2½ " " " ¾ " " 100 "	28·6	0·
" " 1½ " " " 1 " " 100 "	21·2	0·
" " 1½ Barium Chloride ½ " " 100 "	31·3	38·
" " 1½ " " " ¾ " " 100 "	26·6	38·
" " 1½ " " " 1 " " 100 "	17·0	40·
No Spray	92·8	

SOLUBLE SULPHUR WITH AND WITHOUT ARSENATE OF LEAD.

In order to find out whether soluble sulphur alone would cause injury to foliage tests were conducted on Gravenstein trees at Berwick. Three trees were used to each test and the material was applied at the same dates under uniform conditions. Duplicate tests on adjoining plots of the same variety were made with Swifts arsenate of lead paste added to the soluble sulphur at the rate of 5 pounds per 100 gallons. It will be noticed that a slight injury was detected on the plot where 2½ pounds was used to 100 gallons without the arsenate. This injury was confined to the third spray June 14, and was the only injury noticed. It will be seen, therefore, that the injury is due to the arsenate of lead when combined with soluble sulphur. It will be noticed also that the control of scab was not nearly so good on the plots where no arsenate of lead was used, which may be due to the soluble sulphur arsenate being more adhesive than soluble sulphur spray.

Spray used.	Per cent. Scab.	Per cent. Foliage Injury.
Soluble Sulphur 1½ pounds to 100 gallons no arsenate	74·9	0·
" " 2½ " " 100 " " "	81·3	slight.
" " 1½ " " 100 " 5 pounds arsenate of lead	42·	55·
" " 2½ " " 100 " 5 " " " "	36·7	30·6
No Spray	87·4	

LIME-SULPHUR WITH AND WITHOUT ARSENATE OF LEAD.

Tests were made at Bridgetown and Berwick to test out the value of arsenate of lead when added to lime-sulphur as compared with lime-sulphur without arsenate for scab control. The results would seem to show that arsenate of lead does not materially increase the fungicidal value of lime-sulphur. Arsenate of lead, however, has some fungicidal value when used alone, but the low per cent of scab on the Baldwin block at Bridgetown where arsenate of lead was used alone cannot be entirely due to the arsenate, although we cannot otherwise account for the difference.

—	King Apples at Bridgetown.	Per cent. Scab.
Lime Sulphur	1·008, Grasselli arsenate paste 5 pounds to 100 gallons	3·9
" "	1·008, no arsenate	9·48
No Lime sulphur	Grasselli arsenate paste 5 pounds to 100 gallons	21·35
No spray		72·86
	Baldwin at Bridgetown.	
Lime Sulphur	1·008, Grasselli arsenate paste 5 pounds to 100 gallons	1·94
" "	1·008, no arsenate	2·64
No Lime Sulphur	Grasselli arsenate paste 5 pounds to 100 gallons	1·34
No Spray		90·01
	Baldwin at Berwick.	
Lime Sulphur	1·008, Swifts arsenate paste 5 pounds to 100 gallons	2·8
" "	1·008, no arsenate	1·5
No Spray		78·0
	Ben Davis at Berwick.	
Lime Sulphur	1·008, Swifts arsenate paste 5 pounds to 100 gallons	4·5
" "	1·008, no arsenate	7·9
No Lime Sulphur	Swifts arsenate paste 5 pounds to 100 gallons	51·3
No Spray		75·3

BORDEAUX MIXTURE VERSUS LIME-SULPHUR.

Experiments were conducted at Berwick with Bordeaux and lime-sulphur as a spray for the control of scab. The plots were sprayed under similar conditions and were uniform. The results obtained were similar to those of previous years, and show that Bordeaux is equally as effective in scab control as lime-sulphur, but that the russeting reduces materially the quantity of No. 1 and No. 2 fruit, as shown in the packed out results, making Bordeaux quite unsatisfactory other than for scab control.

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It will be noticed that injury to foliage resulted in the Bordeaux-lime-sulphur plot where the regular 4-4-40 (4 pounds bluestone, 4 pounds lime, 40 gallons water) strength was used, whereas where the 3-3-40 (3 pounds bluestone, 3 pounds lime, 40 gallons water) strength was used no injury was noticeable. This injury occurred after the lime-sulphur spray June 15 was applied. It would seem that the 3-3-40 Bordeaux for the first sprays followed by lime-sulphur will give satisfactory results.

Place Where Test made and Variety.	Time of Application.				Per cent. Foliage Injury.	Per Scab.	Per cent. Russet Injury.	Packed out 1 and 2.
	May 18	June 2	June 15	July 2				
Baldwin..................	4-4-40	4-4-40	4-4-40	4-4-40	0·	·07	42·1	38·8
"	3-3-40	3-3-40	3-3-40	3-3-40	0	·06	65·4	19·1
"	4-4-40	4-4-40	1·008	1·008	20·	·02	0·0	94·3
"	3-3-40	3-3-40	1·008	1·008	0	·04	0·0	89·9
"	1·008	1·008	1·008	1·008	....	1·6	0·0	87·5
"	No Spray..........				....	....	....	3·

STRENGTH OF LIME-SULPHUR TO USE.

Experiments were continued again this season to find out what strength of lime-sulphur gives best scab control. The test was conducted on a Spy block of uniform trees. It would appear from the results that the various strengths used were equally effective. Five pounds of arsenate of lead was used to each 100 gallons. The Grasselli concentrated lime-sulphur was used which tested 1·300 specific gravity. The strength of the different sprays used were as follows:

1·014 specific gravity test=1 gallon Concentrate to make 21 3-7 gallons.
1·009 " " " =1 " " " " 33 1-3 "
1·008 " " " =1 " " " " 37·5 "
1·007 " " " = 1 " " " " 42 6-7 "

Where Test Made and Variety.	Time of Application.				Per cent. Scab.
Berwick.	May 19	June 8	June 18	July 1	
Spy....................................	1·008	1·008	1·008	1·008	3·14
"	1·007	1·007	1·007	1·007	2·4
"	1·007	1·008	1·008	1·008	4·29
"	1·009	1·008	1·008	1·008	3·55
"	1·014	1·008	1·008	1·008	3·6
" No spray..........................	....				95·2

LIME-SULPHUR AND PARIS GREEN.

One plot of Kings at Berwick containing three trees, was sprayed four times with lime-sulphur, sp. gr. 1·008 with 1½ pounds of Paris green per 100 gallons. These trees were sprayed on the same dates as the other King plots. The hand pump being used at a pressure of 140 pounds. The amount of bloom was the same on these as adjoining trees, but not only was the foliage badly injured and the trees practically defoliated but the fruit clusters were so damaged that all the fruit dropped soon after blossoming and not a single fruit developed. This experiment would show that Paris green cannot be used in the lime-sulphur spray without causing very great injury to foliage and possibly of an entire crop of fruit.

KENTVILLE.

DRY AND PASTE ARSENATE OF LEAD WITH LIME AND SOLUBLE SULPHUR.

The sprays as given in the following table were all applied under similar conditions in each place and in a uniform manner. Three trees were included in each plot. The trees were as uniform as could be obtained. As the trees were of even size practically the same amount of liquid was used to each plot averaging 15 gallons to 3 trees. The mixture was kept thoroughly agitated and the work carefully done in order to avoid any possible error due to method of application.

All the sprays in the tests on the Baldwin trees were put on May 18, June 3, June 15, and July 2. The foliage injury given below on these trees was confined entirely to the fourth spray. It will be noticed, also, that the control of scab was apparently as good in the plot without arsenate as where arsenate of lead was used in the spray.

The varieties of King and Baldwin were used at Bridgetown in this test and the results would seem to show that arsenate of lead when added to the lime-sulphur adds very little to its fungicidal value. We cannot explain why control of scab should be so great on the plot of Baldwin trees where arsenate of lead only was used.

It will be seen that the foliage injury is much greater on the soluble sulphur plots than on the lime-sulphur plots with the same amount of arsenate of lead. It would appear that the increase of arsenate of lead in the soluble sulphur did not materially increase the total foliage injury at Bridgetown, but at Berwick where the arsenate was left out of the first spray there was no injury. It will be noticed also that there was no apparent injury from the second spray May 31, at Berwick and that the foliage injury was confined principally to the two sprays after blossoming. The plots on which no arsenate of lead was used in the first spray did not show as good scab control as the duplicate plots where it was used and the plots sprayed with soluble sulphur only would show that arsenate of lead very materially increases the fungicidal value of soluble sulphur.

It should be noted that the insect injury recorded is that apparent from an examination of the fruit at picking time and does not include any foliage or other injury up to that time. This orchard has in the past always been well sprayed and the insect pests have, as a result, been kept well under control, which no doubt accounts for the small per cent of insect injury.

TOMPKINS KING APPLE, BERWICK.

Soluble Sulphur used in four Sprays.	Per cent. Foliage Injury.	Per cent. Scab.	Per cent. Insect Injury.
S-S. 1½ pounds to 100 gallons Dry arsenate 2 pounds to 100 gallons	30·	10·4	1·3
" 1½ " " 100 " " " 4 " " 100 "	35·	17·4	0·0
" 1½ " " 100 " Swifts arsenate paste 5 pounds to 100 gallons	65·	18·0	0·0
" 1½ " " 100 " Swifts arsenate paste 7 pounds to 100 gallons	38·	31·3	2·3
No Spray	0·	82·5	7·
L-S 1·008, Swifts arsenate paste 5 pounds to 100 gallons		7·7	·3

KENTVILLE.

GRAVENSTEIN APPLE AT BERWICK.

Soluble Sulphur used in four Sprays.	Per cent. Scab. Spray.	Per cent. Foliage injury		Per cent. Insect Injury.
		1st, 3rd and 4th.		
		Spray.		
S–S. 1½ pounds to 100 gallons Swifts arsenate in three last sprays	52·	0·0	40·0	0·0
" 2½ " " 100 " Swifts arsenate in three last sprays	68·7	0·0	30·0	0·0
" 1½ " "100 " Swifts arsenate in all four sprays	42·	15·	40·0	0·6
" 2½ " " 100 " Swifts arsenate in all four sprays	36·7	20·6	30·0	2·0
" 1½ " " 100 " no arsenate	74·9	0·0	0·0	1·0
" 2½ " " 100 " " "	81·3	·00	0·5	·8
No Spray	87·4	0·0	0·0	5·3

BALDWIN APPLE, BERWICK.

Lime-Sulphur used in four Sprays.	Per cent. Foliage Injury.	Per cent. Scab.	Per cent. Insect. Injury.
L–S 1·008, Dry arsenate 2 pounds to 100 gallons	5·	7·3	0·0
" 1·008, " " 4 " " 100 "	7·	0·0	1·5
" 1·008, Swifts arsenate paste 5 pounds to 100 gallons	2·5	2·8	·35
" 1·008, " " " 7 " " 100 "	4·	1·0	0·0
No Sprays	0·	78·	2·7
L–S 1·008, Swifts arsenate paste 5 pounds to 100 gallons 1st, 2nd and 3rd sprays only	0·	5·7	1·1
" 1·008, Swifts arsenate paste 5 pounds to 100 gallons in 2nd and 3rd sprays only		1·5	1·1
" 1·008, Swifts arsenate paste 5 pounds to 100 gallons 3rd spray only		1·8	1·4
" 1·008, no arsenate used	3·	1·5	2·2

TOMPKINS KING APPLE, BRIDGETOWN.

L–S 1·008, Grasselli arsenate paste 5 pounds to 100 gallons		3·9	4·
" 1·008, Dry Arsenate 2 pounds to 100 gallons		10·67	2·
" 1·008 " " 4 " " 100 "	3·	4·74	5·
" 1·008, no arsenate		9·48	7·
No L–S. Grasselli arsenate paste 5 pounds to 100 gallons	4·	21·35	17·
Not Sprayed		72·86	24·

BALDWIN APPLE, BRIDGETOWN.

L–S1·008, Grasselli arsenate paste 5 pounds to 100 gallons	4·	1·94	1·
" 1·008, Dry arsenate 2 pounds to 100 gallons	4·	1·33	9·
" 1·008 " " 4 " " 100 "	4·	1·04	6·
" 1·008, no arsenate		2·68	7·
No. L–S. Grasselli arsenate paste 5 pounds to 100 gallons		1·34	5·
Not Sprayed		90·01	19·

KENTVILLE.

DRY AND PASTE ARSENATE OF LEAD WITH LIME AND SOLUBLE SULPHUR.

Number of Experiments.	Summary.	Foliage Injury.	Insect Injury.	Per cent. Scab.
1–Soluble sulphur....	1½ pounds 2 pounds dry lead per 100 gallons....	30·	·1·3	10·4
1– " "	1½ " 4 " " " " 100 " .	35·	0·0	17·4
2– " "	1½ " 5 " paste " " 100 " .	60·	0·3	30·0
1– " "	1½ " 7 " " " " 100 " .	38·	2·3	31·3
1– " "	1½ " no arsenate....	......	1·	74·9
3- Lime sulphur.....	1·008, 2 pounds dry lead per 100 gallons......	1·5	3·7	6·2
3– " "	1·008, 4 " " " " 100 "	4·6	4 2	1·73
1– " "	1·008, 5 " paste " " 100 "	2·5	·35	2·8
1– " "	1·008, 7 " " " " 100 "	4·	0·	1 0
1– " "	1·008, no arsenate..........................	3·	2·2	1·5

In general we are safe in drawing the following conclusions:—

1. The spray before the leaves open is not likely to give results sufficiently great to pay for its application.

2. Two foliage applications before blossoming are desirable and that more care should be given to thoroughly protect the foliage up to this time.

3. Two thorough sprays before blossoming followed by two after will give practically clean fruit.

4. The 1·008 specific gravity test strength of lime-sulphur is sufficiently strong to control scab and that a greater strength is a waste and may cause foliage injury and possibly a loss of fruit from burning.

5. Any of the well-established brands of arsenate of lead seems to give equally as good results when used in lime-sulphur.

6. Lime-sulphur alone is nearly as good a fungicide as lime-sulphur-arsenate.

7. Owing to insect injury the arsenate cannot be safely omitted from the spray.

8. Lime-sulphur is equally as good as Bordeaux for scab control.

9. The greatest objection to Bordeaux is the russeting of the fruit, which if bad will reduce the grade.

10. The home-made concentrated is as effective for scab control if used at the same specific gravity test as the commercial concentrated.

11. In all tests with soluble sulphur-arsenate the scab control has not been as good as with lime-sulphur arsenate.

12. Soluble sulphur-arsenate is liable to cause serious foliage injury.

13. Soluble sulphur alone without arsenate of lead is not so good a fungicide evidently due to the arsenate rendering it more adhesive.

14. Barium chloride is of no practical value for lessening foliage injury when added to soluble sulphur-arsenate.

15. A strength of soluble sulphur 1½ pounds to 100 gallons is apparently about as good a fungicide as that of a greater strength and the stronger spray is liable to cause more injury.

16. Owing to the injury liable to result we consider-lime-sulphur-arsenate preferable to soluble sulphur-arsenate.

ORCHARD HEATING.

Nearly all fruit growing sections from time to time suffer some loss from spring frosts killing the fruit during the blossoming period. Such frosts are usually of short duration, and generally are confined to one night but damage may result from a low temperature of only a few hours during the early morning

It has been found practical in fruit growing sections outside of Nova Scotia to use orchard heaters to keep the temperature above freezing during such a period, accordingly a test was made at Berwick during the spring of 1915, to find out whether such heaters could be used economically here. The temperature however did not go low enough to do damage and the experiment was of no value in estimating definitely the advantage from such a practice, although our results show that frosts can be warded off by such means.

The orchard used was one owned by Mr. Fred Parker, located on a rather low piece of land at Berwick. The trees were planted 20 feet apart each way. Thermometers were placed at the northern edge of the orchard and toward the centre. They were placed one on the ground, one 10 feet from the ground, and another 20 feet from the ground. The top thermometers did not register frost whereas the others went below frost, the one at the ground being the lowest. The average being 30·2° F. when the fires were started. The heaters used were made out of ordinary sheet-iron or stove-piping. They are cylindrical in shape and hold about two gallons. One of these cans was placed in the centre of each four trees and as far away from the trees as possible to prevent burning of the leaves or branches, 108 being used per acre. They were filled two-thirds full of crude petroleum and covered with a sheet-iron cover.

During the morning of the 2nd of June the temperature dropped to 30·2° F. The blossom buds were then just unfolding and not advanced enough to be injured by so slight a frost. Nevertheless, the heaters in every alternate row of trees were fired at 2.30 a.m. This was done by going from can to can removing cover, applying a few drops of gasolene to the crude oil and igniting with a torch. The crude oil is hard to ignite when cold, and to save time and labour the gasolene was used as a starter. The temperatures were taken half an hour after the stoves had been lighted and they averaged 35 degrees. Thus fifty-four heaters per acre were sufficient to keep the temperature above the freezing point, and in one-half hour after lighting the temperature went up nearly 5 degrees.

After all danger of frost was over the fires were extinguished by simply placing the covers on the cans. The heaters were burning two hours and consumed one-half gallon of oil each. The following would be approximately the cost of heating one acre of orchard of medium sized trees:—

54 heaters at 10 cents each	$5 40
27 gallons oil at 10 cents per gallon	2 70
Labour of filling, lighting, etc	0 50
Total	$8 60

Of course the initial expense would be the greatest, but after the heaters were obtained all the expense would be that for oil and labour. The expense of the oil would vary according to length of time the heaters were burning.

EXPERIMENTAL STATION, FREDERICTON, N.B.

REPORT OF THE SUPERINTENDENT, W. W. HUBBARD.

THE SEASON.

The winter was, in the early part, clear and cold with scarcely any snow. In the latter part of December, 1914, it was intensely cold, the frost penetrating the bare ground to a greater depth than usual. January, February, and March, 1915, were much milder than the average, the mean temperature for these months being 22·8 degrees Fahr., against an average for forty-two years of 18 degrees, but with less sunshine and only about half the usual precipitation. There was scarcely any snow-covering on the fields at any time and the ground was practically bare after the 9th of March. April was, however, wet with only 102 hours of bright sunshine, while in May there were sixteen, and in June twenty wet days. July had only fourteen days rainy but during one of them there was a precipitation of 3·26 inches, which left the already saturated ground standing in pools of water, and drowned out much crop. August had thirteen days on which rain fell and up to September first the temperature was abnormally low. From May 1 to September 1 there was a rainfall of 19 inches compared with an average for these months, for forty-one years, of 14½ inches. These unusual weather conditions greatly hindered all agricultural operations and in some low-lying districts were entirely prevented.

No frost was recorded at this Station after May 1, though the nights were cool all through the summer. The first frost occurred on September 26, but was only noticeable in low places. Potatoes, corn, etc., were partially killed on October 2, but not generally until the 11th of that month.

The same amount of land as last year, viz., 17 acres, exclusive of potatoes, was devoted to horticultural work, and in addition, 6 acres more were broken up out of sod and cleared from stumps for lawn purposes. This latter portion will be worked level, roads constructed through it and seeded in 1916. The perennial border on the southeast side of the vegetable plots was widened and 119 varieties of perennials were planted in the fall. A lawn 12 feet wide and 600 feet long was sown between the perennial border and road. A second perennial border, 400 feet in length, was established and plantings of willow, spruce, and pine made in the shelter belt to the north-west of the garden. Twenty-seven species of hedge shrubs and trees were planted, some of them in rows 33 feet long and some in rows 66 feet. The hedge rows were placed 15 feet apart.

All varieties of strawberries that did not grow in 1914, and come through the winter, were reset.

Varietal tests were made with all garden vegetables and the fertilizer test begun in 1914 was continued. In this, the experience of the previous year was confirmed in finding that 15 tons of barnyard manure per acre, valued at $15, with from $5 to $10 worth of chemical fertilizers, gave generally much larger yields than where 30 tons of manure per acre, valued at $30, was applied.

Of the one hundred and fifty-two varieties of potatoes grown in 1914, thirty-two were discarded in 1915 as being either undesirable or duplicates of other varieties, and one hundred and twenty varieties were grown. A great difference in the disease resistent qualities of different varieties was noted. While the ground on which the variety rows were planted was fairly uniform in regard to drainage, some rows suffered more than others from wet and yields recorded might have been different under absolutely fair soil conditions. A test of the value of hill selection was attempted with twenty varieties, but the wet weather and uneven ground surface, causing the drowning out of irregular portions of the test rows, prevented the obtaining of any conclusions from this test.

Work done by the Division of Botany in the study of potato diseases was carried on in connection with the general potato crops of this Station and an isolated four acres of land was set apart for special investigational work with powdery scab, club root, etc.

ORCHARD.

In the apple orchard one hundred and sixty trees, out of the eight hundred planted, were killed, mostly by root freezing. The absence of snow and severe cold winds in the more exposed portions of the orchard were the evident cause, as in comparatively sheltered positions the trees came through without loss.

SMALL FRUITS.

The bush fruits planted out in the spring of 1914 came through the winter in good shape with the exception of the blackberries, which died out. All varieties fruited well but the depredations of birds and children prevented the collection of any reliable data. A list of varieties is given below:—

Black Currants.

Black Champion.
Boskoop Giant.
Buddenborg.
Climax.
Clipper.
Collins Prolific.
Eagle.
Eclipse.
Kerry.
Lee Prolific.
Magnus.
Saunders.
Topsy.
Victoria.

Red Currants.

Admirable.
Chautauqua.
Cherry.
Cumberland.
Diploma.
Fay Prolific.
Greenfield.
Perfection.
Rankins Red.
Red Cross.
Red Dutch.
Red Grape.
Victoria Red.
Wilder.

White Currants.

Large White.
White Cherry.
White Grape.

Gooseberries.

Crown Bob.
Downing.
Pearl.
Whinham Industry.

Raspberries.

Brighton.
Columbian.
Count.
Golden Queen.
Herbert.
King.
Marlboro.
Older.
Ruby.
Sarah.
Shaffers.

FREDERICTON.

STRAWBERRIES.

Thirty-three varieties of strawberries were planted on May 15 to replace those which died out through being badly packed by the shippers. None of the plants were allowed to blossom and all superfluous runners were taken off. Following is a list of the varieties grown:—

Abington P.
Beder Wood P.
Brandy Wine P.
Bubach I.
Cassandra P.
Chesapeake P.
Clyde P.
Cordelia P.
Desdemona I.
Enhance P.
Excelsior I.
Gandy P.
Haverland I.
Howard P.
Julia P.
Lovett P.
Mariana P.
Meteor I.
Ophelia P.
Parsons Beauty P.
Pocomoke P.
Portia I.
President I.
Sample I.
Senator Dunlap P.
Splendid P.
Tennessee P.
Valeria P.
Virgilia P.
Warfield I.
Wildwood.
Williams P.
Wm. Belt P.

VEGETABLES.

All vegetables did well with the exception of beans, which were badly attacked by anthracnose. Very little trouble from insect pests was experienced and altogether the season may be considered a fairly good one from a vegetable growing point of view.

The following tables give further details of the various vegetables grown.

BEANS.

Ten strains or varieties were tested, but as all varieties were so badly attacked by anthracnose no data were taken.

BEETS.

Six varieties of beets were grown and produced a good crop of shapely roots.

	Yield per acre.		Quality.
	tons	lb.	
Crosby Egyptian	8	1380	Good.
Ruby Dulcet	8	720	Excellent.
Eclipse	8	60	Very good.
New Meteor	6	1860	Excellent.
Rennie Cardinal Globe	6	1420	Good.
New Early Black Red Ball	6	1200	Medium.

BRUSSELS SPROUTS

Dwarf Improved was the variety grown and yielded a good crop of solid sprouts.

CABBAGE.

Eight varieties of cabbage were under test, each variety gave good results. They are listed below in order of maturity, the last three being ready at the same time. Copenhagen Market is very little later than Early Jersey Wakefield and produces much better heads.

Paris Market.
Early Jersey Wakefield.
Copenhagen Market.
Danish Summer Ballhead.
Fottler Improved Brunswick.
Flat Swedish.
Extra Amager Danish Roundhead.
Improved Amager Danish Roundhead.

CARROTS.

Four varieties of carrots were grown, the half long type being the most desirable.

	Yield per acre.	
	tons.	lb.
Half Long Chantenay	18	1,224
Improved Nantes	16	208
Improved Danvers Half Long	14	1,568
Early Scarlet Horn	11	968

CAULIFLOWER.

Cauliflowers have been uniformly good for the past three years. This season a few heads were attacked by soft rot. The following three varieties were grown, Early snowball, Extra Selected Early Dwarf Erfurt and Danish Giant Dryweather.

CELERY.

Seven varieties of celery were under test and the following tables show the results obtained.

	Yield per acre	
	tons.	lb.
Giant Pascal	34	1,520
Winter Queen	21	240
Evans Triumph	20	1,800
Noll Magnificent	19	1,600
Paris Golden Yellow	19	280
White Plume	18	960
French Success	16	120

CORN.

Fifteen varieties of corn were tested, ten hills of each variety were planted, 3 feet apart each way.

	No. of cobs produced from ten hills.
Early Dawn	68
Metropolitan Sweet	60
Astor	58
Golden Bantam	47
Early Iowa	45
Ex. Early Adams	43
Pocahontas Sweet	41
Stowell Evergreen	41
Perkins Extra Early Market	39
Early Malakoff	38
Early Fordhook	38
Early Malcolm	33
Early Evergreen	29
Country Gentleman	14
Black Mexican	Failed to mature.

FREDERICTON.

CUCUMBERS.

Six varieties of cucumbers were grown and gave a fairly good crop, Improved White Spine and Davis Perfect being the most desirable varieties.

Davis Perfect.
Extra Early Russian.
Fordhook Famous.
Giant Pera.
Peerless or Improved White Spine.
Prize Pickle.

LEEK.

Two varieties were tested, viz., English Flag and French Cerantan, both produced good crops.

LETTUCE.

Seven varieties were grown, the most satisfactory being Grand Rapids and Dreer All Heart.

Cos Trianon.
Dreer All Heart.
Giant Crystal Head.
Grand Rapids.
Hanson Improved.
Iceberg.
Simpson Black-seeded.

MELONS.

Five varieties of muskmelons and four varieties of watermelons were grown but failed to produce anything worth while.

ONIONS.

Eleven strains or varieties of onions were grown. The following table shows the yield per acre of each variety calculated from rows 33 feet long and 1 foot apart. The seed was sown May 24 and the crop harvested September 18.

——		Yield per acre.	
		tons	lb.
Danvers Yellow Globe	(from sets)	26	1460
Danvers Yellow Globe	(from seed)	26	665
Large Red Wethersfield	(from sets)	23	530
Yellow Globe	(from seed)	21	240
Yellow Onions	(from sets)	19	610
Red Globe	(from seed)	15	680
White Globe	(")	14	1040
Salzer Giant Red Wethersfield	(")	13	1720
Johnson Dark Red Beauty	(")	12	1740
Large Red Wethersfield	(")	10	1120
Ailsa Craig	(")	7	1840

PARSNIP.

Two varieties were grown and produced good crops of shapely roots.

——	Yield per acre.	
	Bush.	lb.
Improved Hollow Crown	561	20
Intermediate	475	8

FREDERICTON.

PEAS.

Fifteen varieties of peas were sown May 25. All varieties made good growth and produced fair average crops.

Variety.	Length of row.	Ready for use.	Yield.	
			lb.	oz.
Heroine	33	Aug. 7	36	
Quite Content	33	" 7	34	
Early Giant	33	" 1	30	9
Advancer	33	" 1	30	8
Telephone	33	" 18	30	
Thomas Laxton	33	July 22	26	4
Gradus	33	Aug. 7	25	3
Sutton Excelsior	33	" 7	24	14
Juno	33	" 11	24	12
The Lincoln	33	" 14	24	8
Gregory Surprise	33	" 7	23	4
Stratagem	33	" 7	22	8
American Wonder	33	July 29	16	15
Premium Gem	33	Aug. 2	16	10
Dainty Duchess	33	" 2	14	4

RADISH.

Only one variety was grown, Early Scarlet White Tipped; this proved fairly satisfactory.

SQUASH.

Ten varieties of squash were tested of which Golden Hubbard, Delicata, Delicious and Heart of Gold were the most satisfactory from a culinary point of view; the long white vegetable marrows are out of favour and cannot be given away in this district. The seeds were sown in strawberry boxes May 5, and planted out in the open ground June 18.

TOMATOES.

Variety.	Quantity of ripe fruit picked. per acre.		Yield per acre.					
	For week ending Sept. 11.	For week ending Sept. 18.	Ripe.		Green.		Total.	
	lb.	lb.	Tons	lb.	tons	lb.	tons	lb.
Bolgiano Extra Early Wealthy	1224	3264	17	1512	3	1888	21	1400
Alacrity 14B	1904	2992	16	640	5	1424	22	64
Ponderosa	2992	4896	16	368	4	1792	21	160
Ponderosa Golden	544	3536	14	1910	3	528	18	438
Livingston Globe		816	14	1376	4	704	19	580
Line-bred Northern Adirondack	1360	5440	13	1472	2	1028	16	500
Alacrity 12B	2176	2448	12	198	4	976	16	1174
Rennie Earliest	1632	5440	11	1664	4	1248	16	912
Prosperity			11	576	2	1984	14	560
Matchless			10	673	4	568	14	1241
Sunnybrook Earliana	2108	3808	9	1652	5	1424	15	1076
Bonny Best		4624	9	1584	6	1872	16	1456
Johnson Jack Rose	816	2720	8	1544	6	240	14	1784
Trophy			8	1544	4	432	12	1976
Chalk Early Jewel	1632	544	7	1096	11	32	18	1128

FREDERICTON.

TURNIPS.

Eight varieties of turnips were sown for table purposes on the 2nd June and gave excellent results, particulars of which are given below:—

	Bush.	Lb.	
Best of All	1,805	38	per acre.
Westbury Purple Top	1,483	34	" "
Bangholm Purple Top	1,452		" "
Sutton Purple Top	1,425	25	" "
Skirving Purple Top	1,318	45	" "
Favourite	1,151	2	" "
Carter Invicta	1,140	24	" "
Hall Purple Top	1,093	3	" "

POTATOES.

A number of experiments were planned in connection with potato growing, but the weather in May and June was abnormally wet and the land upon which the work was to be done was newly cleared, not yet underdrained nor levelled, which make a combination of conditions which prohibited the carrying out of much of this work.

Seven acres of potatoes were grown. Four acres were under fertilizer tests, the stock was pure Green Mountain and Commercial Green Mountain, on plots of one-twentieth acre each. The yield varied on the different plots from 103·3 bushels to 304 bushels per acre. The average yield for the sixty-eight plots was 199·78 bushels per acre.

The potatoes were planted with a potato planter on June 14. Seed was cut about three eyes to the set.

The soil was a sandy loam, with a stiff clay subsoil, and previous to tile draining in 1913 was very wet. The whole area covered by these plots was planted to potatoes in 1914 without fertilizer of any kind and gave a crop of 209 bushels per acre.

The ground was kept well cultivated; either the single or two-row cultivator was run through the plots, followed by the horse hoe weekly. Cultivation began within one week of planting and was continued until August 1. Spraying with Bordeaux mixture and arsenate of lead began the latter part of July, and seven applications were made, using about 40 gallons per acre. Check rows unsprayed were left, an equal number in each plot. These died down three weeks before the crop was killed down by frost on October 11. Some of the tops were damaged by frost on September 25 and October 5. Plots were dug from the 18th to the 25th October. These potatoes had a growing season of 103 days from the day of planting till the first injury by frost. There was a good deal of rhizoctonia, some black leg and some of other diseases. Early blight and late blight in the check rows caused some diminution in yield. In fact it would be a conservative estimate to say that there would have been 20 per cent larger yield had there been no disease of any kind.

The stand looked fairly even over all the plots, though on the 1st of August a careful scoring of the plots was made and they varied from 50 per cent to 75 per cent of a perfect stand. The result of the spraying test was that the sprayed portion of the field gave 205 bushels and the unsprayed 163 bushels per acre, a gain from spraying of 42 bushels per acre.

COST OF PRODUCING AN ACRE OF POTATOES.

One acre was planted commercially with a one-row potato planter. This was land broken from the stump in 1914. It was ploughed in May, manured at the rate of 16 tons of green barnyard manure per acre, and an attempt made to get the manure incorporated with the soil with a heavy disc harrow. As the manure was very long it was not possible to get the land in condition for a potato planter, so it was ploughed again and harrowed. On June 19, Empire State, Green Mountain, and Irish Cobbler potatoes, cut to three eyes to the set, were planted, and at the same time 400 pounds of commercial fertilizer was applied through the planter. This fertilizer was made up of 50 pounds sulphate of ammonia, 50 pounds nitrate of soda, 250 pounds acid phosphate, 50 pounds muriate of potash (approximately a 4-9-6 mixture). The crop was cultivated five times and hilled up three times. It was sprayed with poisoned Bordeaux mixture six times. Check rows were left unsprayed and figures of the gain from spraying are given below. The crop was harvested on October 15. The yield was reduced somewhat by early and late blight, rhizoctonia, mosaic, and other diseases.

The cost of production was made up as follows:—

Seed, 21 bushels at 60 cents per bushel	$12 60
Cutting seed at 10 cents per bushel	2 10
Ploughing land twice at 32 cents per hour	3 20
Harrowing twice	64
Harrowing in manure with disc harrow	1 28
Manure, 16 tons at $1	16 00
Applying manure with spreader	2 72
Fertilizer, 400 pounds applied in row when planting	6 37
Planting, man, boy and team, 3 hours	1 41
Cultivating, 5 times, 7½ hours at 25 cents	1 87
Horse hoeing (hilling), 3 times, 4½ hours at 32 cents	1 44
Hand hoeing (partially), 15 hours at 18 cents	2 70
Weeding (partially), 2 hours at 18 cents	36
Spraying, six times at $1.25	7 50
Digging, man and team, 4 hours	1 28
Picking up potatoes, 5 men, 5 hours each at 18 cents	4 50
Delivering from field, man and team, 3 hours	96
Total	$66 93

The total yield from the acre was 239·25 bushels, of which 220 bushels (80 barrels) were sold out of the field at $1.75 per barrel for table stock and the balance (7 barrels) of small and bruised tubers were sold for poultry feeding at 50 cents per barrel. The sale value of the crop was thus $143.50, which after deducting the cost of production left a profit balance of $76.57 for the acre.

The results of spraying the three varieties on the above acre were as per the following table:—

Variety.	Sprayed Bushels per acre.	Unsprayed Bushels per acre.	Gain by spraying. Bushels per acre.
Empire State	250	166	84
Green Mountain	235	189	46
Irish Cobbler	291	228	63

FREDERICTON.

VARIETIES.

The growing of different varieties each in a single row of 66 hills was continued. The land on which they were grown was newly cleared and suffered from unevenness of surface and excessive rain so that the comparative test was not quite so fair as in previous years and no yields were obtained equal to those of 1913 and 1914. The figures for the three years are given. The source of the seed as given in the table does not mean that the seed was obtained in 1915, from the places mentioned, but was obtained from these places the first year it was grown at the Fredericton Station.

Variety.	From.	Total Yield 1913.	Total Yield 1914.	Total Yield 1915.	Marketable Potatoes 1915.	Unmarketable Potatoes 1915.
		Bush.	Bush.	Bush.	Bush.	Bush.
Abundance	Ottawa	374	259·5	127·6	61·6	66·0
Acquisition	“	457	335·4	270·6	90·2	180·4
American Wonder	Charlottetown	310	391·3	268·4	215·6	52·8
American Wonder	Ottawa	152	308·0	294·8	246·4	48·4
Brydon Beauty	“	319	308·0	264·0	187·0	77·0
Brydon	“	378	233·2	246·4	158·4	88·0
Burpee Extra Early	“	272	246·4	264·0	206·8	57·2
Burbank Seedling	Charlottetown	199	422·4	255·2	180·4	74·8
Carman No. 1	Indian Head	325	387·2	338·8	237·6	101·2
Carman No. 3	Ottawa	462	343·2	228·8	149·6	79·2
Clyde	“	479	378·4	261·8	171·6	90·2
Conquering Hero	“	418	316·8	268·4	114·4	154·0
Dalmeny Beauty	“	356	228·8	110·0	57·2	52·8
Dalmeny Beauty	Indian Head	462	356·4	312·4	242·0	70·4
Dalmeny Hero	Ottawa	435	334·4	248·6	140·6	99·0
Dalmeny Regent	"	360	299·2	325·6	211·2	114·4
Dalhousie Sdlg	“	365	316·8	268·4	184·8	83·6
Dreer Standard	Nappan	312	338·8	299·2	198·0	101·2
Dreer Standard	Ottawa	393	404·8	272·8	162·8	110·0
Dreer Standard	Charlottetown	440	475·2	281·6	242·0	39·6
Dreer Standard	Indian Head	442	466·4	323·4	253·0	70·4
Early White Prize	Nappan	418	387·2	259·6	215·6	44·0
Early White Albino	Ottawa	356	312·4	248·6	193·6	55·0
Early Norther	“	235	255·2	193·6	132·0	61·6
Early Hebron	“	334	510·4	275·0	211·2	63·8
Early Rose	“	299	127·6	206·8	140·8	66·0
Early Nebraska	“	415	334·4	167·2	105·6	61·6
Early Ohio	“	338	259·6	292·6	257·4	35·2
Early May	“	277	162·8	228·8	138·6	85·8
Early Six Weeks	“	347	237·6	305·8	215·6	83·6
Early Norther	Indian Head	323	382·8	301·4	231·0	70·4
Early Triumph		....	418·0	387·2	290·4	94·6
Eldorado	Ottawa	338	356·4	244·2	125·4	118·8
Empire State	Charlottetown	310	370·0	195·8	138·6	57·2
Empire State	Indian Head	402	475·2	259·6	209·0	50·6
Empire State	Ottawa	220	444·4	259·6	193·6	66·0
Empire State	Nappan	332	158·4	191·4	136·4	52·8
Eureka Extra Early	Ottawa	462	409·2	207·9	132·0	74·8
Everett	Nappan	422	475·2	260·7	127·6	132·0
Everett	Indian Head	204	215·6	255·2	191·4	63·8
Everett	Charlottetown	409	431·2	369·6	220·0	149·6
Factor	Nappan	220	215·6	143·0	85·8	57·2
Factor	Ottawa	385	198·0	272·8	149·6	123·2
Factor	Indian Head	224	365·2	237·6	184·8	52·8
Fannie Dean	Ottawa	343	268·4	143·0	94·6	48·4
Gold Coin	Nappan	270	426·8	200·2	129·4	70·4
Gold Coin	Ottawa	365	259·6	178·2	125·4	52·8
Gold Coin	Charlottetown	448	224·4	189·2	110·0	79·2
Green Mountain	Ottawa	402	237·6	222·2	136·4	85·8
Green Mountain Jr	“	308	281·6	191·4	143·0	48·4
Green Mountain	Charlottetown	446	272·8	176·0	70·4	105·6
Green Mountain	W. H. Moore	380	431·2	312·4	224·4	88·0
Houlton Rose	Ottawa	512	426·8	246·8	195·8	50·6

Variety.	From.	Total Yield 1913.	Total Yield 1914.	Total Yield 1915.	Marketable Potatoes 1915.	Unmarketable Potatoes 1915.
		Bush.	Bush.	Bush.	Bush.	Bush.
Houlton Rose	Indian Head	136	308·0	198·0	134·2	63·8
Irish Cobbler	“	413	488·4	297·0	255·2	41·8
Late Puritan (Br)	Ottawa	367	435·6	211·2	171·6	35·2
Late Puritan	Indian Head	455	343·2	216·7	140·8	74·8
Langworthy	Ottawa	233	484·0	367·4	308·0	59·4
Lowell Green Mountain	Gardiner, Me			301·4	250·8	50·6
Longkeeper	Ottawa	266	268·4	189·2	132·0	57·2
Cummings Pride	Carleton Co. N.B			259·6	171·6	88·0
Black Kidney	Kings Co., N.B			63·8	57·2	6·6
Manistee	Ottawa	387	404·8	222·2	176·0	46·2
McIntyre	Charlottetown	391	369·6	226·6	36·2	15·0
Morgan Seedling	Charlottetown	356	308·0	250·8	220·0	30·8
Morgan Seedling	Indian Head	444	400·4	261·8	204·6	57·2
Morgan Pink Seedling	Ottawa	523	365·2	314·4	248·4	66·0
Morgan Seedling	Nappan	198	220	165·0	125·4	39·6
Money Maker	Ottawa	440	233·2	279·4	228·8	50·6
Money Maker	Indian Head	242	488·4	298·1	253·0	44·0
Monarch	Ottawa	338	189·2	195·8	105·4	90·2
McCullough	York Co., N.B	176	316·8	266·2	195·8	70·4
New Chieftain	Ottawa	250	334·4	391·6	343·2	48·4
New Scotch Rose	“	631	290·4	272·8	231·0	41·8
New Queen	“	242	290·4	235·4	198·0	37·4
New Queen	Indian Head	259	193·6	277·2	226·6	48·4
New Colonist	Ottawa	418	237·6	304·7	228·8	74·8
Norcross	“	255	259·6	217·8	147·4	70·4
Pierremont Seedling	“	316	308·0	305·8	202·4	103·4
Provost	“	332	228·8	184·8	99·0	83·6
Prince Albert	“	308	418·0	275·0	191·4	83·6
Rawlings Kidney	Nappan	349	422·4	292·6	228·8	63·8
Rawlings Kidney	Charlottetown	396	404·8	294·8	220·0	74·8
Rawlings Kidney	Ottawa	360	360·8	286·0	189·2	96·8
Reeves Rose	Nappan	314	400·4	246·4	193·6	52·8
Reeves Rose	Indian Head	220	426·8	268·4	204·6	63·8
Rochester Rose	Indian Head	195	312·4	336·6	259·6	77·0
Rochester Rose	Charlottetown	308	387·2	202·4	184·8	17·6
Royalty	Ottawa	376	325·6	246·4	136·4	110·0
Rural New Yorker	Charlottetown	277	411·6	239·8	45·0	9·5
Satisfaction	Ottawa	387	334·4	182·6	136·4	46·2
Superlative	“	277	193·6	259·6	184·8	74·8
Scottish Triumph	“	303	343·2	237·6	171·6	66·0
Sharp Victor	“	319	228·8	173·8	81·4	92·4
Silver King	“	426	334·4	235·4	180·4	55·0
Sir Walter Raleigh	Ottawa	402	356·4	246·4	226·6	19·8
Table Talk	Nappan	545	400·4	255·2	112·2	143·0
Table Talk	Ottawa	360	246·4	259·6	198·0	61·6
Table Talk Br	“	352	206·8	226·6	173·8	52·8
Table Talk	Indian Head	422	347·6	334·4	220·0	114·4
Table Talk	Charlottetown	442	365·2	231·0	173·8	57·2
Todd Wonder	Ottawa	290	312·4	160·6	140·8	19·8
The Scott	“	325	294·8	301·4	220·0	81·4
The Moreton	“	371	255·2	338·8	268·4	70·4
Up to date	“	290	281·6	244·2	189·2	55·0
Vicks	Charlottetown	477	334·4	294·8	266·2	28·6
Vermont Gold Coin	Ottawa	268	343·2	259·6	211·2	48·4
Vermont Gold Coin	Indian Head	393	281·6	376·2	301·4	74·8
Wee McGregor	Nappan	422	440·0	332·2	277·2	55·0
Wee McGregor	Ottawa	479	325·6	211·2	176·0	35·2
Wee McGregor	Indian Head	272	343·2	236·2	170·2	66·0
Wee McGregor	Charlottetown	446	347·6	348·7	268·4	79·2
White Chief	Ottawa	415	294·8	266·2	195·8	70·4
White City	“	382	272·8	228·8	187·0	41·8

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Variety.	From.	1915 Average of Row.	From selected Hills.
		Bush per acre.	Bush per acre.
Whitney Seedling No. 1	St. Stephen, N.B.	209	357·4
" " " 2	"	273	363·0
" " " 3	"	242	290·4
" " " 4	"	272	344·8
" " " 5	"	290	363·0
" " " 6	"	293	390·2
" " " 7	"	264	317·6
" " " 8	"	279	401·4
" " " 9	"	273	335·7

NUMBER OF EYES ON A SET.

A test was made with Empire State and Carman No. 1 potatoes by planting 200 hills of whole seed, 200 hills of seed cut to one eye, 200 hills cut to two eyes, and 200 hills cut to three eyes. The weather and soil conditions interfered with a close test but the figures are given subject possibly to change under better conditions.

——	Whole seed.		One eye.		Two eyes.		Three eyes.	
	Large Bush. per acre.	Small Bush. per acre.	Large Bush. per acre.	Small Bush. per acre.	Large Bush. per acre.	Small Bush. per acre.	Large Bush. per acre.	Small Bush. per acre.
Empire State	264·8	37·0	146·4	10·5	202·2	14·5	209·2	25·0
Carman	173·3	50·7	171·8	18·8	87·7	23·9	162·4	31·2

The only deduction it would be fair to make under the circumstances would be that whole seed and sets cut to three eyes or over are likely to give a larger proportion of small potatoes in the hill than sets with one and two eyes, when the date of planting is as late as June 22.

The tests of potatoes from selected hills were entirely spoiled by the flooded condition of portions of the land.

FREDERICTON.

ORNAMENTAL GARDENING.

NURSERY STOCK.

The ornamental shrubs planted out in the nursery during the years 1913-14 have made very satisfactory growth and will be used for beautifying the grounds next season.

HEDGES.

Twenty-seven varieties of hedges were planted in the fall comprising the following varieties, viz.:—

Conifers—
  Juniperus cupressifolia foemina.
    " " *mascula.*
    " *communis suecica.*
  Larix leptolepis.
  Picea Engelmanni..
    " *excelsa.*
    " *pungens Kosteriana glauca.*
  Retinospora pisifera.
  Thuya occidentalis.
    " *occidentalis Wareana.*
Deciduous Shrubs—
  Berberis Thunbergii.
  Caragana arborescens.
    " *frutescens.*
Caragana pygmaea.
Cytisus hirsutus.
Hydrangea arborescens.
  " *paniculata.*
Ligustrum amurense.
Philadelphus Satsumi.
Rhamnus cathartica.
  " *Frangula.*
Rosa rugosa.
Spiraea arguta.
  " *japonica (callosa) rubra.*
  " *Margaritae.*
  " *van Houttei.*
Syringa Josikaea.

ROSES.

Fifty-three varieties of roses were grown and all did well, the following dozen proving satisfactory in every way:—

Caroline Testout	H.T.	—Clear pink.
Charles Lefebvre	H.P.	—Crimson.
Frau Karl Druschki	H.P.	—Pure white, very large blooms.
General Jacqueminot	H.P.	—Bright crimson, beautiful in the bud.
Hugh Dickson	H.P.	—Brilliant crimson, shaded scarlet.
J. B. Clark	H.P.	—Deep scarlet.
Jonkheer J. L. Mock	H.T.	—Beautiful pink shaded carmine.
Killarney	H.T.	—Brilliant pink, a beautiful rose.
Mme. Abel Chatenay	H.T.	—Bright salmon pink, flushed carmine.
Mme. Melanie Soupert	H.T.	—Salmon yellow, suffused carmine.
Mrs. John Laing	H.P.	—Soft pink, free blooming and reliable.
White Killarney	H.T.	—Pure waxy white.

BULBS.

Five thousand eight hundred bulbs were planted in the fall of 1914 for spring flowering and bloomed in the following order: Snowdrops, crocuses, scillas, chionodoxa, early-flowering tulips, narcissi, late flowering tulips, anemones, *Iris hispanica* and *Iris anglica.* The bulbs were arranged in groups at regular intervals, having regard to colour effects and time of blooming, so that the border was bright with flowers during the earlier weeks of spring. The Darwin tulips were especially fine.

ANNUALS.

The interest in annuals is steadily increasing and these easily grown flowers were very popular with visitors to this station. One hundred and seventy-eight varieties of annuals were sown in hot beds or the open ground. The seedlings were pricked out as soon as they were large enough to handle and finally transplanted to flowering quarters. Further details as to the date of sowing, height and blooming period are given in the following tables:—

ANNUALS sown in open ground.

Name.	Sown.	Height.		Began to Bloom.	Bloom over.
		Ft.	Inch.		
Bartonia aurea		..	10	June 26	Sept. 30
Candytuft (2 varieties)		..	8	" 28	" 28
Godetia (3 varieties)		1	2	July 8	Oct. 5
Leptosiphon hybridus	June 1	..	2	" 28	
Lupinus, mixed	" 1	..	9	" 15	" 5
Malope, mixed	" 1	3	3	Aug. 10	
Nasturtium, dwarf (3 varieties)	" 1	..	7	July 10	Sept. 28
Nasturtium, Climbing (6 varieties)	" 1			" 10	" 28
Poppy, Shirley	" 1				
Poppy, double carnation	" 1				

ANNUALS sown in Hot-bed.

Name.	Sown.	Ft.	Inch.	Began to Bloom.	Bloom over.
Abronia umbellata	April 16	1	6	Aug. 3	Sept. 21
Acroclinium, double rose	" 16	1	2	June 26	Oct. 5
Alonsoa Warscewiczii compacta	" 16	..	8	Aug. 10	" 11
Alyssum, Little Dorrit	" 16	..	3	June 13	" 26
Amaranthus tricolor	" 16	1	6	Foliage plant..	
Antirrhinum, Intermediate (4 varieties)	" 16	1	..	July 28	" 8
Antirrhinum, Tom Thumb (5 varieties)	" 16	..	6	Aug. 5	" 8
Antirrhinum, Tall mixed	" 16	1	6	" 6	" 8
Antirrhinum, Double (3 varieties)	" 16	1	3	" 10	" 8
Arctotis grandis	" 16	2	6	July 1	" 5
Argemone hybrida grandiflora	" 16	3	3	" 3	" 28
Asters, (30 varieties	" 16	2	..	Aug. 8	" 5
Balsam, Sutton Impd. Camellia-flowered	" 16	1	6	July 7	" 5
Browallia elata	" 16	1	6	" 21	" 5
Calendula officinalis flore pleno, (2 varieties)	" 16	1	..	June 28	" 5
Carnation, annual mixed	" 17	..	10	Aug. 20	" 5
Celosia plumosa	" 17	1	6	July 31	Sept. 28
" *cristata*	" 17	..	6	Aug. 4	" 28
Centranthus macrosiphon	" 17	2	..	" 20	" 28
Chrysanthemum, annual (2 varieties)	" 17	1	3	July 10	" 28
Clarkia	" 17	1	6	" 19	Oct. 5
Coreopsis (6 varieties)	" 17	1	6	" 9	Sept. 28
Cosmea	" 17	4	9	" 12	" 28
Dahlia, Single, Collarette	" 17	3	6	" 26	" 28
Daisy, Sutton Double	" 17	..	4	Aug. 7	Nov. 15
Dianthus Heddewigii	" 17	..	7	July 20	Oct. 5
Dimorphotheca aurantiaca hybrids	" 17	..	9	" 22	Sept. 28
Eschscholtzia, The Geisha	" 17	..	10	" 19	" 28
" mixed	" 17	..	10	" 21	" 28
Gaillardia, Sutton Double mixed	" 17	1	..	" 27	Oct. 5
Helichrysum	" 17	4	..	" 23	" 5
Heliotrope (3 varieties)	" 17	.	6	Did not bloom	
Hollyhock (Henderson annual)	" 17	6	.	Aug. 15	Sept. 28
Impatiens Holstii Hybrids	" 17	Failed.	..		
Jacobaea, Double mixed	" 17	1	3	" 1	" 28
Kochia trichophylla	" 20	2	9	Foliage plant..	
Larkspur (3 varieties)	" 20	1	6	July 30	Oct. 5
Lavatera rosea splendens	" 20	3	..	" 18	" 5

FREDERICTON.

ANNUALS SOWN IN HOT-BED.—*Continued.*

Name.	Sown.	Height.		Began to Bloom.	Bloom over.
		Ft.	Inches.		
Linum grandiflorum rubrum	" 20	..	9	" 15	" 5
Lobelia grandiflora, (Cobalt blue)	" 20	..	4	" 21	" 5
Lobelia ramosa (tenuior)	" 20	..	4	" 23	" 5
Marigold, French double	" 20	1	..	" 18	Sept. 28
Marigold, French single	" 20	1	..	" 18	" 28
Mignonette	" 20	Seed failed			
Mimulus	" 20		4	" 4	" 28
Myosotis argentina	" 20	Failed			
Myosotis Ruth Fischer	" 20	"			
Nemesia (6 varieties)	" 20			" 22	" 28
Nicotiana affinis	" 20			" 19	" 2
Pansy (7 varieties)	" 20			Aug. 20	Nov. 15
Pentstemon		Failed			
Petunia (3 varieties	" 20	..	7	July 21	Sept. 28
Phlox Drummondii (7 varieties)	" 20	..	6	" 13	" 11
Portulaca (2 varieties)	" 17			" 30	" 11
Ricinus communis major	" 19	3	6	Foliage plant	
Ricinus, mixed	" 19	3	6	"	
Salpiglossis, mixed	May 14	2	3	Aug. 11	" 11
Salvia (2 varieties)	" 13	1	3	" 19	" 11
Scabious	" 2	1	6	" 15	" 28
Schizanthus, Veitch Grandiflorus Hybrids	" 13	..	10	" 11	" 11
Stocks	" 13	1	..	July 28	" 11
Sunflowers, Henderson Red	" 18	7	..	" 20	" 11
Swan River Daisy		Failed			
Sweet Sultan	June 1	1	6	" 30	" 11
Tagetes signata pumila	" 1	1	..	" 24	" 11
Verbena, mixed	May 13	..	6	Aug. 4	" 28
Viscaria cardinalis	" 13	..	8	" 10	" 11
Zinnia, Sutton Giant mixed	" 13	2	3	" 20	" 11

SWEET PEAS.

The ground for sweet peas was deeply trenched in the fall and a liberal quantity of manure dug in and fertilizer composed of 5 pounds acid phosphate, 2½ pounds muriate of potash, applied at the rate of half an ounce per square yard, and lightly hoed in. The seeds were sown in flats one inch apart and the young plants pinched out after making the second pair of leaves. This pinching out causes strong laterals to start from the base; as soon as these reach 3 inches high they are gradually hardened off and then planted out 9 inches apart. The ground on either side of the row was thickly sprinkled with air-slaked lime, care being taken not to get too much on the plants. Nearly all varieties produced four blossoms on the stem, many of them measuring 1½ inches across the standard. Very little stripe occurred and practically no mildew. The following list gives a selection of the best dozen varieties from the 105 varieties grown at this Station:—

Asta Ohn—Lavender, large bloom, mostly fours, inclined to stripe at end of season.
King Manoel—The best maroon, very large blooms, threes and fours, nicely waved.
King White—The best white, large blooms, mostly fours, nicely waved.
Maud Holmes—A fine crimson, large blooms, mostly fours, nicely waved, practically sunproof.
Orange Perfection—Rich colour, large blooms, threes and fours.
Elfrida Pearson—Lovely shade of pink, large blooms, mostly fours, well waved.
Lady Evelyn Eyre—Pale shell pink, large blooms, mostly fours, exquisite form.
Lilian—Best of its colour, very large blooms, mostly fours, well waved.
Mrs. A. Ireland—Cream and rose bicolour, large blooms, threes and fours, nicely waved.
Mrs. C. W. Breadmore—Primrose buff, edged rose, large blooms.
Edith Taylor—Pleasing shade of rosy salmon.
Mrs. W. J. Unwin—Orange scarlet flake, large blooms, nicely waved.

FREDERICTON.

DAHLIAS.

A collection of dahlias, including a number from each group, were grown and the following fifteen selected as being satisfactory in every way:—

Paeony flowered	Geisha.
	Glory of Baarn.
	Queen Wilhelmina.
Cactus	Countess Lonsdale.
	Mrs. E. Mawley.
	Starfish.
	Kriemhilde.
Decorative	Mrs. Roosevelt.
	Jack Rose.
Single	Yellow Century.
	Scarlet Century.
	White Century.
Pompon	Crimson Queen.
	Little May.
	Snowclad.

SUMMER-FLOWERING CHRYSANTHEMUMS.

Forty-five varieties of summer-flowering chrysanthemums were grown. The following list gives the best dozen:—

Crimson Marie Masse—Crimson bronze.
Dundee P.—Deep crimson.
Glory of Sevenoaks—Bright golden yellow, large flowers, free bloomer.
Golden Glow—Clear yellow, very large blooms.
Jacquenette P.—Rosy-carmine, large sprays of medium size flowers.
Lady Duvol P.—Deep rosy pink, good size and form
Lillie—Pearl pink, nice habit.
Nydia P.—Pure white, a beautiful flower.
Ontario P.—Pink with silvery white shadings.
Tonkin—Reddish orange, large flowers.

Varieties marked "P" are Pompon

PERENNIALS.

The herbaceous perennials grew well and produced a profusion of bloom from spring till frost. One hundred and nineteen varieties were added in the fall. A detailed list is given below:—

Achillea Ptarmica flore pleno.
Aconitum Wilsonii.
Anemone japonica, 8 varieties.
Aquilegia, 4 varieties.
Aster, 7 varieties.
Boltonia, 3 varieties.
Campanula, 4 varieties.
Clematis Hendersonii.
Clematis recta.
Coreopsis grandiflora.
Delphinium, in variety.
Dicentra spectabilis.
Dictamnus, 3 varieties.
Doronicum, 2 varieties.
Epimedium, 5 varieties.
Euphorbia.
Gypsophila paniculata flore pleno.
Helenium, 5 varieties.
Helianthus, 2 varieties.
Hemerocallis, 9 varieties.
Hesperis matronalis.
Hibiscus Moscheutos, 6 varieties.
Lupinus.
Mertensia pulmonarioides.
Monarda didyma.
Oenothera Youngii.
Papaver orientale, 4 varieties.
Platycodon grandiflorum.
Polemonium, 2 varieties.
Pyrethrum, 2 varieties.
Spiraea, 6 varieties.
Statice latifolia.
Thalictrum aquilegifolium atropurpureum.
Trollius caucasicus Excelsior.
Valeriana officinalis.
Veronica spicata.

IRIS.

Twenty varieties of Iris were grown and every plant bloomed. Fifty plants of *Iris Kaempferi* were planted out in groups of ten in the fall.

FREDERICTON.

PAEONIES.

Seventeen varieties of this important group of herbaceous perennials were transplanted from the nursery to the perennial border.

PHLOX.

Twenty-six varieties of this easily grown perennial were planted in the fall. The list of varieties under test is as follows:—

Phlox Arendsii Amanda.
" " Charlotte.
" " Grete.
" " Helene.
" " Kathe.
" " Louise.
" *divaricata.*
" *glaberrima suffruticosa* Miss Lingard.
" *paniculata* Antonin Mercie.
B. Comte.
Coquelicot.
Coquette.
G. A. Strohlein.
Gefion.
Henry Murger.
Jeanne d'Arc.
Mme. Paul Dutrie.
Mrs. Jenkins.
Pantheon.
Prof. Virchow.
R. P. Struthers.
Rosenberg.
Rynstrom.
Selma.
Thor.

FREDERICTON.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIÈRE, QUE.

REPORT OF THE SUPERINTENDENT, JOS. BEGIN.

CHARACTER OF SEASON.

The spring of 1915 was late, wet, and cold. The lack of rain and heat in April delayed the thawing out of the soil until the middle of May. It was not possible to plant fruit trees before May 19, and even at this date it was found when planting the trees that the ground was frozen in certain places. The growth was at least two weeks later than in the past three years. From June 25 to July 25 there fell only 1·65 inches of rain, and all crops suffered from want of it. The months of August and September were more favourable as regards rain and temperature. The temperature was only moderately warm, but no frost was recorded in September. October was normal. The first frost to injure plants was registered on October 7, the temperature falling to 29·6° F. The flowers, which up to this time had been magnificent, were for the most part injured and were entirely destroyed by a very hard frost on the 18th. The months of November and December were fine autumn months from the horticultural standpoint. Enough snow fell at the end of December to protect the soil. From January 1 to March 31 the temperature was colder than the mean of the last three winters. February was the coldest month of the year, and the mean temperature of this month was 9° F. The coldest temperature of the winter was 22° below zero, which was on February 21.

FRUIT CROP.

Ordinarily, in the region near Ste. Anne, there is an abundant fruit crop. Notwithstanding that the crop of 1914 was good, the crop of 1915 will be still more noted for the quantity of fruit produced. These successive crops prove that the extra care given to the orchards for several years, such as pruning and spraying is well repaid.

It is deplorable to state that thousands of gallons of plums, damsons, and other good varieties were not picked, there being no market to sell them in. By reason of the difficulties of transportation and the uncertainty of the market at the date of harvesting, the buyers offered so low a price that several growers left their plums on the trees. A remunerative price was obtained for the early varieties, such as Mirabelle, Favourite, and Early Yellow, of which the fruit was ripe on August 18. The varieties Reine Claude de Bavay and Lombard had still some good fine fruit at the end of October, demonstrating that a plum orchard of well-assorted varieties can furnish plums from August 15 to the end of October. Apples were a little less abundant than in 1914, but the price was higher, as a rule, compensating well for the care in their production.

PLANTATION OF FRUIT TREES.

One hundred and thirty-two apple trees and twenty plum trees were planted on May 19 on a soil drained and well prepared during the summer of 1914. This plantation completes a commercial orchard of 10 acres containing 668 apple trees, representing 115 varieties; 209 plum trees, representing 30 varieties; 81 cherry trees, representing 15 varieties; and 19 pear trees representing 8 varieties. The growth of the young trees was very satisfactory and the young wood was well ripened.

A certain number of young trees planted in 1913 had some good fruit. Among apples two trees of Trenton might be mentioned, a Montreal Beauty and a Hyslop crab apple gave some very good fruit. Three Lombard plum trees had their first fruit ripen on October 10.

The cherries planted in 1913 gave the following results from a tree each of six varieties:—

Variety.	In flower.	Ripe.	Harvested	Description
Early Richmond	June 3	Aug. 8	4 half pints	very fine.
Large Montmorency	" 7	" 10	4 "	very fine.
English Morello	" 12	" 15	3 "	small.
May Duke	" 3	" 8	2 "	very fine.
Vladimir	" 5	" 10	2 "	very fine.
Suesse Fouche Morello	" 10	" 12	2 "	very fine.

SMALL FRUITS.

The yield of small fruits was a medium one, but the fruit would have been much larger if there had been no drought in July as this hindered the development of the fruit. The currant maggot caused an appreciable amount of damage to the crop. The maggot penetrates the fruit, which falls to the ground and has no value for market.

RASPBERRIES.

Eight varieties of raspberries planted in 1914 gave a good yield. The King variety gave the first fruit of the season on July 17. The Columbian was the most productive and had the longest fruiting season. Following are the yields from four bushes of eight varieties:—

Variety.	No. of plants	Quantity in pints.	Date of 1st picking.	Date of 2nd picking.
Cuthbert (red)	4	7	July 24	Aug. 10
Columbian (purple)	4	8	" 29	" 30
King (red)	4	6	" 16	July 30
Brighton (red)	4	5	" 19	" 30
Shaffer (purple)	4	4	" 23	Aug. 10
Count (red)	4	4	" 23	" 4
Sarah (red)	4	4	" 24	" 2
Herbert (red)	4	3	" 22	" 4

STRAWBERRIES.

Eighteen varieties of strawberries gave their first crop this year. The crop was good and the fruit very fine. The varieties Haverland, Wm. Belt, Gandy, and Abington gave the highest yields. The fruit of the variety which gave the best crop had less regular fruit than the other three. The earliest varieties were Enhance, Abington, and Beder Wood; the latest varieties were Brandywine, Pocomoke, and Tennessee Prolific. Three sprayings with Bordeaux mixture were made to control rust with complete success. The first application was made before the development of the leaves; the second after the flowers fell, and the third after the picking season.

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VEGETABLES.

RHUBARB.

Five varieties of rhubarb planted in 1914 gave a good yield. The variety Linnæus was the first ready for the table; the variety Hobday Giant gave the largest crop. Of all the varieties, the Prima Donna was preferred.

ONIONS.

Three rows each 33 feet in length were planted of the three following varieties: Large Red Wethersfield, Yellow Globe, and Extra Early Red. An insecticide was used on each row against the root maggot as follows:—

First.—Hellebore—2 ounces to 1 gallon water.

Second.—Carbolic emulsion—hard soap, well sliced, 1 pound; crude carbolic acid, 1 pint; boiling water, 1 gallon.

The soap was dissolved in water, the acid added, and then churned violently. Before using it was diluted to 25 gallons.

Third.—Pyrethrum powder (fresh), 1 ounce to 3 gallons.

The insecticides above mentioned were applied at intervals of a week apart as follows:—

Variety.	Application of Insecticides.				Good Plants.	Insecticide.
	1st.	2nd.	3rd.	4th.		
Large Red Wethersfield	June 4	June 11	June 19	June 26	90%	Hellebore.
Yellow Globe Danvers	" 4	" 11	" 19	" 26	95%	Carbolic Emulsion.
Extra Early Red	" 4	" 11	" 19	" 26	90%	Pyrethrum Powder.

BEETS.

Five varieties of beets for the table were sown in the open on May 20. All the varieties gave a good yield of roots of good quality. The variety Eclipse is the one which has given the best yield for three years.

PEAS.

Four varieties of peas, namely, Thos. Laxton, Gradus, McLean Advancer and Stratagem were planted on May 20 in rows of 100 feet of each variety. These rows were divided into two equal parts of 50 feet. One part was harvested when the peas were ready for eating and the other at maturity. Furthermore, a test was carried out to learn if it is better to plant several varieties becoming ready for use at different seasons, or one early variety at intervals. The following table gives some details in regard to the results:—

Variety.	Sown.	Date of Harvesting.						Total.
		July 18.	July 26.	July 26.	Aug. 5.	Aug. 15.	Aug. 20.	
		lb.	lb.	lb.	lb.	lb.	lb.	lb.
Thos. Laxton	May 20	3	4	3½	2	......	....	12½
Gradus	May 20	2	3	4	2	......	....	11
McLean Advancer	May 20	....	....	4	4½	5	....	13½
Stratagem	May 20	....	....	3	6	10	....	19
Thos. Laxton	May 26	1	3	6	4½	....	....	14½
Thos. Laxton	June 3	......	.. 2	4	2	2	1	11
Thos. Laxton	June 11	......	....	2	4	3	4	13

RIPE.

Variety.	Sown.	Harvested.	Total Harvested.
			lb.
Thos. Laxton	May 20	Aug. 23....	8
Thos. Laxton	" 26	" 30....	7½
Thos. Laxton	June 3	Sept. 4....	7
Thos. Laxton	" 11	" 10....	6
Gradus	May 20	Aug. 28....	10
McLean Advancer	" 20	Sept. 14....	12½
Stratagem	" 20	" 18....	10¾

Fifteen varieties of garden peas were planted for comparison. The varieties Telephone, Heroine and Juno gave the best yield. The earliest varieties were the Gregory Surprise, Premium Gem, and American Wonder.

ONIONS.

Onions Thinned to Different Distances.

Onions were thinned to one, two, and three inches between the plants, three good varieties being used, to learn what is the best distance to thin in order to obtain the highest yield and the best product. Later on the data gathered from the results for several years will establish the best distance to thin onions.

Production of Small Onions or Sets.

In order to obtain some sets from a very thick seeding of onions, three rows, each one hundred feet in length, were sown very thickly of the varieties Large Red Wethersfield, Yellow Globe Danvers, and Extra Early Red. To force the early maturity of the plants when the sets were about one-quarter to one-half an inch in diameter the plants were allowed to remain about 200 plants to the foot. From this seed sown on well-prepared soil, the following results were obtained:—

Yellow Globe Danvers.—A row 100 feet in length sown May 24 and harvested October 2, yielded 4 pounds of fairly good sets.

Large Red Wethersfield.—A row 100 feet long sown May 24 and harvested October 2, yielded 8 pounds of good sets.

Extra Early Red.—A row 100 feet long, sown May 24 and harvested October 2 yielded 12½ pounds, very good sets for transplanting in the spring of 1916.

CABBAGE.

Protection of Cabbage against Root Maggot.

Two rows of twenty-five plants each of Early Jersey Wakefield and Copenhagen Market cabbage were planted alongside one another. The plants in one row of each variety were protected by tar-felt paper discs, whereas the other row had none. Two of the protected plants were destroyed by the maggots, whereas twelve plants not protected were destroyed. The experiment was repeated on two rows of cauliflower with exactly the same result, which demonstrates that the tar-felt paper discs have protected the plants sufficiently to compensate for the cost of labour in using them.

Cabbage—Test of Varieties.

Of twelve varieties of cabbage planted in 1915, the Copenhagen Market, Danish Summer Ballhead, and Early Jersey Wakefield were the earliest. The late winter varieties, Fottler Improved Brunswick and Improved Amager Ballhead, gave the best return. The red cabbage have not succeeded as well. The sowing was done in a hotbed on April 28, the plants were pricked out in May and planted out on June 7.

TOMATOES.

Tomatoes—Test of Varieties.

Nine varieties of tomatoes were tested in 1915. The Alacrity, selected from the Earliana at the Central Experimental Farm, has given the best results. The first ripe fruits were on this variety, and the fruit was abundant and of fine appearance. The other varieties preferred were Sunnybrook Earliana, Bonny Best and Prosperity.

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Tomatoes—Pruning and Supporting the Plants.

In order to learn whether it is advantageous to prune and support tomato plants different methods of pruning and supporting were begun this year and will be continued until some definite conclusion is drawn. We give here the results for three varieties planted in the open on June 4:—

Variety.	Distance.	Ready for use.	Ripe. lb.	Remarks.
Earliana Sunnybrook	4 x 4 ft.	Aug. 30	5·8	not pruned or staked.
Bonny Best	4 x 4 ft.	“ 25	6·4	not pruned or staked.
Earliana Sunnybrook	4 x 2 ft.	Aug. 25	5·8	pruned to 1 stem and staked with 5 ft. stake.
Bonny Best	4 x 2 ft.	“ 27	6·0	pruned to 1 stem and staked with 5 ft. stake.
Earliana Sunnybrook	4 x 2ft.	Aug. 23	8·2	supported by 3 wires 12 inches apart.
Bonny Best	4 x 2 ft.	“ 24	7·0	supported by 3 wires 12 inches apart.
Earliana Sunnybrook	4 x 2 ft.	Aug. 26	7·4	half of foliage removed, staked with 5 ft stake.
Bonny Best	4 x 2 ft.	“ 28	6·7	half of foliage removed, staked with 5 ft. stake.

Green Tomatoes—Test of Methods of Ripening.

Twelve well-developed green tomatoes were harvested and exposed to the sun outside to find how they matured. The skin changed colour by the 10th day; the skin, however, had become wrinkled and heavy before taking on a good colour.

The same quantity was picked green as in the first case and suspended in a building where the mean temperature was 61·4° F. These green tomatoes became red by the eleventh day. The skin was not so wrinkled as in the first case.

Another equal quantity was put in a closed box. In this last case the fruit took on a good red colour on the ninth day.

A basket of green tomatoes after having been covered with straw was put in a closed box. The colour was good by the eighth day. In each of the four cases an equal number of tomatoes showing traces of red were put under the same condition and in each case they were ripe two days before the others.

The flavour of those exposed to the sun was good, though inferior to the fruit ripened on the plant; the pulp was also more fibrous with a very slight bitter taste. In the second case the firmness of the pulp was more pronounced than in the first case, fibrous, and a bitter taste somewhat pronounced. The fruit in the closed box was the least fibrous, the flavour being nearly equal to fruit picked from the plant. Covered with straw in a box the fruit was strongly bitter, the pulp was fibrous and the taste disagreeable.

TURNIPS FOR TABLE USE.

Eight varieties of turnips planted for the table gave good yields. The varieties Invicta and Skirving are considered the best.

SQUASH AND VEGETABLE MARROW.

Of the eight varieties tested the Long Vegetable Marrow is the most noteworthy from the point of view of production and keeping quality. The White Bush has not given as large a yield but is a desirable variety because of the small amount of space it takes up.

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PARSLEY.

The Double Curled variety of parsley is preferred. Sown May 20, it was ready for the table on July 19.

CUCUMBERS.

Seven varieties of cucumbers planted in hills gave a large yield. The varieties Prize Pickle and Cool and Crisp were the earliest. The Extra Early Russian and the Giant Pera gave the largest yields.

PARSNIPS.

Parsnips sown May 28 were ready for use August 20. The variety Improved Hollow Crown was thinned to 2, 3, and 4 inches apart. The largest yield was obtained from those thinned to 3 inches apart.

BEETS.

Beets were thinned to 2, 3 and 4 inches apart to learn if table beets thinned to the least distance would have less fibre than those left further apart. After two or three years' experience the conclusion reached ought to be interesting.

SALSIFY.

The variety Long White gave a good yield of superior quality.

CARROTS.

The varieties Improved Nantes and Half Long Danvers Improved are the earliest and of good quality. The same experiment in thinning the plants was tried with carrots as with beets.

LETTUCE.

Six varieties of lettuce were sown on May 18, the varieties Dreer All Heart and Iceberg are the best.

BEANS.

Of eleven varieties planted the Bountiful Green Bush gave the best yield and the longest pods. The results obtained with this desirable vegetable are given below:—

Variety.	Row.	Planted.	Ready for use.	Height. — Inches.	Yield.	
	ft.				lb.	oz.
Bountiful Green Bush	30	May 18	July 28	17	9	8
Extra Early Valentine	30	" 18	" 29	15	6	12
Extra Early Refugee	30	" 18	" 31	16	7	8
Kenney Gold Wax	30	" 18	" 30	17	4	4
New White Seeded Stringless Green Pod	30	" 18	" 25	16	6	4
Grennell Rustless Wax	30	" 18	" 25	15	7	
Refugee or 1,000 to 1	30	" 18	" 28	16	8	
Round Pod Kidney	30	" 18	" 28	16	6	8
Stringless Green Pod	30	" 18	Aug. 3	17	5	12
Valentine Wax	30	" 18	July 26	17	5	
Wardwell Kidney Wax	30	" 18	" 25	16	6	4

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POTATOES.

YIELD of Varieties, 1915.

Variety.	Row.	Salable.	Small.	Total.	Yield per acre.	
	ft.	lb.	lb.	lb.	bush.	lb.
American Wonder	66	56	15	71	312	24
Acquisition	66	42	15	57	250	48
Clyde	66	58	14	72	316	48
Carman No. 1	66	24	8	32	140	48
Carman No. 3	66	61	20	81	356	24
Dalmeny Beauty	66	47	13	60	264	
Dreer Standard	66	64	13	77	338	48
Empire State	66	43	10	53	233	12
Factor	66	45	11	56	246	24
Gold Coin	66	44	20	64	281	36
Hard to Beat	66	22	10	32	140	48
Irish Cobbler	66	62	12	74	325	36
Late Puritan	66	36	20	56	246	24
Green Mountain	66	83	9	92	404	48
Money Maker	66	69	11	80	352	
Morgan Pink	66	65	18	83	365	12
Morgan Seedling	66	80	25	105	462	
Rawlings Kidney (Ashleaf Kidney)	66	90	8	98	431	12
Reeves Rose	66	34	5	39	171	36
Rochester Rose	66	53	13	66	290	24
Table Talk	66	65	15	80	352	
Vick Extra Early	66	69	13	82	360	48
Warrior (Davies)	66	82	8	90	396	

These twenty-three varieties of potatoes planted in 1915, will be given a five years' test to establish their relative merits.

Potatoes—Experiment with Different Kinds of Sets.

For this test the plots were each 66 feet in length by 30 inches in width. The sets were planted 12 inches apart and covered with four inches of soil. The planting was as follows:—

1. Sixty-six potatoes, 2 inches and less in diameter.
2. Sixty-six sets cut to one eye.
3. Sixty-six sets cut to two eyes.
4. Sixty-six sets cut to three eyes or more.

In the following table will be found the results that have been obtained with the different sets:—

Variety.	Date of Planting.	Sets.	Weight.	Salable.	Small.	Total.
			lb.	lb.	lb.	lb.
Warrior (Davies)	June 7	small	6½	81	10	91
Warrior (Davies)	" 7	1 eye	3	73	7	80
Warrior (Davies)	" 7	2 "	5½	76	7	83
Warrior (Davies)	" 7	3 "	6½	63	12	75
Empire State	" 7	small	6¼	114	22	136
Empire State	" 7	1 eye	3	75	22	97
Empire State	" 7	2 "	6	144	20	164
Empire State	" 7	3 "	6¾	105	30	135

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Cost of Producing an Acre of Potatoes.

Below will be found the cost of producing an acre of potatoes in 1915:—

Rent of land at $3 per acre	$ 3 00
Use of implements at 60 cents an acre	60
Cost of one-third of an application of 24 tons manure per acre, at $1 per ton	8 00
First autumn ploughing, 2 horses at 34 cents, 10 hours	3 40
Disc harrowing in autumn, 2 horses, 10 hours at 34 cents	3 40
Ploughing in spring, 2 horses, 10 hours at 34 cents	3 40
Disc harrowing, 2 horses, 5 hours at 34 cents	1 70
Harrowing with smoothing harrow, 2 horses, 2 hours at 34 cents	68
Drilling, 2 horses, 5 hours at 34 cents	1 70
Planting, hand work, 45 hours at 17 cents	7 65
First harrowing, 2 horses, 2 hours at 34 cents	68
Second harrowing, 2 horses, 2 hours at 34 cents	68
Hoeing and weeding, 1 horse, 10 hours at 27 cents	2 70
First spraying, 10 ounces of Paris green, 2 pounds arsenate of lead in 40 gallons water	95
Spraying hand work, 5 hours at 17 cents	85
Transporting the insecticide, 2 horses, 3 hours, at 34 cents	1 02
Hoeing and cultivating the soil, 1 horse, 10 hours at 27 cents	2 70
Second spraying, 6 pounds lime, 6 pounds sulphate of copper, 12 ounces Paris green, 40 gallons water	1 35
Transporting the spray mixture, 2 horses, 3 hours at 34 cents	1 02
Hand work, 5 hours at 17 cents	85
Hoeing, 1 horse, 10 hours at 27 cents	2 70
Third spraying, insecticide and Bordeaux mixture	1 35
Transporting the spray mixture, 2 horses, 3 hours at 34 cents	1 02
Hand work, 5 hours at 17 cents	85
Digging, 2 horses, 10 hours at 34 cents	3 40
Hand work, 80 hours at 17 cents	13 60
Picking and storing, 40 hours at 17 cents	6 80
Cartage, 2 horses, 5 hours at 34 cents	1 70
Hand work, 10 hours at 17 cents	1 70
Total cost	$79 45
Total yield per acre, bushels.	301
Cost per bushel to grow cents.	26·39

The soil was sandy and gravelly, rather poor but well suited to the production of potatoes. The subsoil was made up of coarse gravel very permeable to water and to air allowing the water to pass down very rapidly. The month of June and the month of July having been very dry, the potatoes were late in starting growth, but had favourable conditions at the end of July and in August.

With three sprayings the insects were controlled perfectly and the crop did not suffer at all from them. Our tools for the culture of potatoes were not the best adapted for economical production on a large scale, but compared favourably with those used by the majority of the potato growers of the region. There is no doubt but that with tools more suitable for growing potatoes in quantity the cost could be reduced about 25 per cent. It is proper to note that the season of 1915 was the most unfavourable for potatoes for the last five years.

BULBS.

Visitors paid much attention to the bulbs in 1915. The early varieties of tulips Joost van Vondel, Pottebakker, Cottage Maid, La Reine and Artus were in flower on May 22. Some thousands of flowers of varied colours could be seen during the first days of June. Four thousand five hundred additional bulbs were planted during the first days of November. In September, all the bulbs which had bloomed the previous spring were lifted from the ground. Before re-planting, the small bulbs were separated from the large ones and planted in a nursery.

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FLOWERS.

The permanent situation destined for floriculture has not yet been chosen. Three hundred and twenty varieties of annual flowers were sown on May 28 in a border 350 feet in length by 4 feet in width. Sixteen varieties of asters and seventy-two varieties of sweet peas gave a profusion of bloom. The cosmos, the everlasting, the salpiglossis and the snapdragons were remarkable as were the mauve lavatera and the clarkia. The French marigold and the leptosiphon make very pretty borders.

ORNAMENTAL TREES.

A row of ornamental trees was planted for six hundred feet on the public road along the front of the farm. These trees comprised 50 European mountain ash and 50 Norway maple, planted alternately 15 feet apart, the object being in time, to remove the kind which proves the less useful; the permanent trees will then be 30 feet apart. The soil here is a heavy clay but well drained.

EXHIBITIONS.

The horticultural products, including flowers, were exhibited at the large district exhibitions at Montmagny and Ste. Anne de la Pocatière, and attracted much attention on account of the number of varieties exhibited and by the quality of the products.

Ste. Anne de la Pocatière.

EXPERIMENTAL STATION FOR CENTRAL QUEBEC, CAP ROUGE, QUE.

REPORT OF THE SUPERINTENDENT, GUS. LANGELIER.

THE SEASON.

The spring of 1915 was about an average one for earliness. Though snow was practically all away at the beginning of April, rather cold weather followed so that seeds were put in at approximately the usual dates. One of the most remarkable features of the season was the extraordinary length of time, for this district, during which there was no frost, that is from May 16 until October 23. This is fully a month longer than usual. It can be said that 1915 was favourable to horticultural plants, the only drawback being the prolonged drought of midsummer. This affected some of the vegetables considerably, cut down the yield of bush fruits, and decreased the size of bloom in flowers.

CROP OF FRUIT AND VEGETABLES ON STATION AND IN DISTRICT.

Apples and cherries were a medium crop, plums very good, also strawberries, whilst currants, gooseberries, and especially raspberries were very much affected by the drought of midsummer. All heat-loving plants such as tomatoes, peppers, egg plant, were very good, so were cucumbers. Melons, beets, carrots, parsnips, salsify, leek and onions were only medium, being kept back by the prolonged spell of dry weather which came a while after germination. Cauliflower, cabbage and celery did very well.

Investigations in horticulture at this Station relate to fruit, vegetables and ornamental plants. The total area devoted to this work is 20·37 acres.

FRUITS.

Under this head come tree fruits, grapes, bush fruits, and strawberries. There are 12·93 acres in fruit at Cap Rouge.

TREE FRUITS.

The tree fruits grown at this Station are apples, cherries, pears, plums, taking up 11·79 acres of ground.

APPLES.

The apple orchards cover an area of 10·64 acres and contain 987 trees of 142 varieties. The following, planted in 1911 or afterwards, fruited in 1915 or before: Duchess, Granby, Jewel, McMahan, Milwaukee, Montreal Beauty, Montreal Peach, Okabena, Patten Duchess, Percival, Petrel, Renaud, Royal Table, Rupert, Transcendent, Trenton, Wealthy, Wm. Chambers, Wolf River, Yellow Transparent.

Cultural Experiment with Apples.

To throw some light on the question of the best cover crop for an orchard, a cultural experiment was started in 1914. In some rows, the grass is cut and the hay left as a mulch, in others the grass is cut and the hay taken off, in others rape is alternated with clover as a two-year rotation, whilst in others either red clover, vetches, or rape is used as an annual cover crop. The land is uniform all through, the trees were all planted the same year and are of the same varieties for each lot, so that in a few years this will be very interesting.

Cost of Establishing an Orchard.

A great many farmers wish to know the probable cost of establishing an orchard and to help them find this out, all expenses in connection with a block of 420 Wealthy and McIntosh trees are recorded. These trees are spaced 17½ feet in all directions with the intention of taking out the Wealthy in a few years and leaving the McIntosh 35 feet apart.

Best Varieties of Apples for Central Quebec.

The following are the varieties of apples which seem to be the best for Central Quebec, though the list may be changed in a few years after testing others at this Station:—

Summer: Yellow Transparent, Lowland Raspberry, Duchess.
Autumn: Peach of Montreal, Wealthy, Alexander.
Winter: Fameuse, McIntosh, Wolf River, Milwaukee.

CHERRIES.

There are fifty trees representing fifteen varieties and covering 0·28 acre of ground. The following varieties, planted in 1911 or afterwards, fruited in 1915 or before: Ceris de France, Grotte Morello, Montmorency Large, Montmorency Ordinare, Orel, Vladimih, Montmorency Large, combines, more than the others, high yielding propensity with fine fruit.

PEARS.

As it is problematic whether this kind of tree fruit will do well in this part of the country, only eleven were put in of three varieties and covering an area of 0·06 acre. They were all planted in 1911, have made a vigorous growth, but have not yielded any fruit yet.

PLUMS.

There are 209 plum trees in the orchards, comprising 40 varieties, mostly European and American, and occupying 0·81 acre of ground. Nearly every variety planted in 1911 had yielded by 1914 and there seems no doubt that for quick returns plums are ahead of apples. Very fine fruit was obtained from Bonne Sainte Anne, whilst good looking plums of high to medium quality came from Lombard, Moore Arctic, Brackett, Mankato and Sunrise. The three last named are American, whilst the others are European varieties.

GRAPES.

These cover an area of 0·3 acre and comprise 128 vines of 28 varieties. Most of them were winter-killed in 1915 when the mild weather, melting away all the snow, was immediately followed by hard frosts. Canada, McTavish and Yomaga were the only varieties to fruit in 1915. The plantation will be replaced in the spring of 1916 and in the autumn of the same year different cheap materials will be tried as covers to protect the vines against frost.

CAP ROUGE.

BUSH FRUITS.

The bush fruits grown at this Station are currants—black, red, white—gooseberries and raspberries; they take up 0·87 acre of ground.

CURRANTS.

There are 192 bushels, comprising 16 varieties of Black, 12 of Red, 3 of White, and covering an area of 0·15 acre.

Black Currants.

There are six bushes each of the following sixteen varieties: Black Champion, Boskoop Giant, Buddenborg, Climax, Clipper, Collins Prolific, Eagle, Eclipse, Kerry, Lee Prolific, Magnus, Ontario, Saunders, Success, Topsy, Victoria Black. One year after planting, the average per bush was 0·9 ounce or at the rate of 265 pounds per acre; two years after planting, 5 ounces per bush or 726 pounds per acre; three years after planting, 4 pounds 10 ounces per bush or 8,841 pounds per acre. The largest producer is Climax which yielded at the rate of 786, 1,301, 11,011 and 17,424 pounds per acre, the first, second, third, and fourth year after it was planted. Unfortunately this variety is not on the market, but Boskoop Giant is and showed itself a fairly good second. A number of plants of Climax are grown at the Station, from cuttings and seeds of the best bush, and it is expected that within a few years, hundreds of this fine variety can be distributed in the district.

Red Currants.

There are 78 bushes of red currants of 12 varieties. Fay Prolific has shown itself the best yielder with a production of 11,253 pounds of fruit per acre in 1915. Though this is not considered a very hardy variety, it does very well here, probably because the piece of ground where the currant bushes are gets an early and rather deep blanket of snow, which is a fine protection against the frost.

White Currants.

There are 18 bushes of three varieties, the best yielder of which was White Grape, which produced at the rate of 7,018 pounds of fruit in 1915.

GOOSEBERRIES.

There are ninety-six bushes of twelve varieties, green, red, yellow. The highest yielder is Silvia, but it is not on the market yet. Downing is one of the standard sorts, but it is not nearly as productive as Silvia or other varieties originated by the late Dr. Wm. Saunders.

RASPBERRIES.

There are ten varieties on trial, with an area of 0·64 acre. The varieties which seem best adapted to this district are King for an early crop, and Herbert as the main one. It is, however, possible that after a few years' test, other varieties may be found which will do better than these.

STRAWBERRIES.

There are thirty-two varieties on trial at this Station, with an area of 0·28 acre. This is getting to be an important crop in some parts of central Quebec, and the Island of Orleans, a few miles east of Quebec city, probably now produces more of this delicious fruit than the same area anywhere in the province. The best yielder in 1915 was Uncle Jim with 6,443 pounds per acre, closely followed by Dunlap with 6,417 pounds per acre. Excelsior was the earliest, but with medium sized fruit of fair to poor quality. After a few years' trial, the following varieties have been found suitable for this district, but it is possible that others may be found later on to take their place:—

Name.	Season.	Size.	Colour.	Quality.	Yielder.	Shipper.
Excelsior...	Very Early...	Medium..........	Dark red.	Medium..........	Productive......	Very firm.
Glen Mary	Mid-season....	Large to very large..........	Crimson..	Very good........	Very productive	Firm.
Dunlap.....	Early.........	Large............	Dark red.	Good...........	Very productive	Firm.
Uncle Jim .	Mid-season to late.........	Very large........	Bright red	Good to very good	Very productive	Fairly firm.
New Globe	Late..........	Large to very large............	Dull red..	Medium to good..	Very productive	Very firm.

VEGETABLES.

The area in vegetables at Cap Rouge in 1915 was 3·96 acres and all the leading varieties were grown of practically all kinds which will give satisfactory results in the district.

POTATOES.

Twenty-two varieties were in the trial plots in 1915. The soil was a sandy loam with shale a couple of feet below and was manured at the rate of about twenty tons per acre. The Colorado beetle was kept in check by Bordeaux mixture to which half a pound of Paris green was added per 40 gallons of water; this also warded off fungous diseases. The sets were cut of liberal size with two or three eyes each and were planted in drills. The piece of ground was very uniform which gave each variety the same advantage.

The following table gives details for 1915:—

YIELD of Potatoes at Cap Rouge in 1915.

Name.	Marketable.		Small.		Total.		Mar-ketable.	Rank.	
	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.		Small.	Total.
Irish Cobbler............	209	....	24	12	233	2	1	4	1
Morgan Seedling..........	184	48	26	24	211	12	2	2	2
Vick Extra Early.........	165	....	11	....	176	....	3	17	4
Carman No. 1............	156	12	23	6	179	18	4	6	3
Gold Coin................	156	12	19	48	176	....	5	8	5
Late Puritan.............	151	48	15	24	167	12	6	12	6
Carman No. 3............	151	48	8	48	160	36	7	21	8
Dreer Standard..........	147	24	15	24	162	48	8	13	7
Money Maker............	136	24	16	30	152	54	9	11	10
Factor..................	129	48	15	24	145	12	10	14	11
Rawlings Kidney.........	122	4	13	12	135	16	11	15	12
Table Talk..............	118	48	35	12	154	....	12	1	9
Clyde...................	99	....	8	48	107	48	13	22	15
Hard to Beat............	94	36	18	42	113	18	14	9	14
Warrior (Davies).........	92	24	26	18	118	42	15	3	13
Dalmeny Beauty.........	88	....	13	12	101	12	16	16	16
American Wonder........	72	36	17	36	90	12	17	10	17
Rochester Rose..........	48	24	24	12	72	36	18	5	18
Empire State............	48	24	9	21	57	45	19	20	19
Morgan Seedling Pink....	46	12	11	....	57	12	20	18	20
Reeves Rose.............	41	48	11	....	52	48	21	19	21
Acquisition..............	24	12	22	....	46	12	22	7	22
Total............	2,484	52	386	33	2,871	25	....	....	....
Average for 1915..	112	57	17	34	130	31	....	....	....

The five highest yielders, for an average of five years are:—

	Bush.	Pounds per acre.
Money Maker	248	5
Irish Cobbler	234	18
Table Talk	226	12
Late Puritan	221	5
Gold Coin	218	58

GARDEN BEANS.

Particular attention was paid to garden beans and no less than 33 varieties and strains have been tried since 1911. The "limas" were dropped because the season is rather short for them; of the "kidneys," the pole varieties were left aside because staking is a costly proposition and also because they are not so hardy as the "bush" sorts and must be sown a little later. Amongst the "dwarfs," the "wax" or "butter" beans are in much greater demand, though some of the "green-podded" are really of better quality. Everything has now been discarded with the exception of the six following varieties: Challenge Black Wax, Hodson Long Pod, Wardwell Kidney Wax, Davis Green Pod, Refugee or 1000 to 1, Stringless Green Pod. In 1915, the heaviest yielder was Hodson Long Pod, at the rate of 470 bushels per acre, which is 30 pounds and 13 ounces for a row of 30 feet. This is quite exceptional, though, as the seven leading varieties only yielded at the rate of 193 bushels per acre, during the last five years. The earliest variety, as usual, was Challenge Black Wax which was the lowest yielder. Its precocity makes it valuable, as prices always rule higher at the beginning of the season. It took sixty-four days after sowing the seed to have it ready for market, whilst Hodson Long Pod took seventy-eight and the average for the seven leading varieties was seventy-two.

GARDEN BEETS.

There are different shapes in garden beets, long, intermediate, top, globe, ovoid, turnip. The first two are generally grown to be kept through winter, but the others, especially the globe, are fast taking the place of all others. At one time, it was taken as granted that the longer shaped a garden beet was, the later it was, and vice versa, which placed the turnip-shaped kinds at the head of the list for earliness. But of late, the round or globe-shaped varieties have been much improved and seem to be superseding all others. For a discriminating market a beet more than two inches in diameter is not considered at its best and it is well to grow varieties which will reach this size as soon as possible. Of the twenty varieties and strains tried at this Station since 1911, Eclipse has been found the most satisfactory, both for earliness and for yield. It has the distinction of being thoroughly bred and there is less chance with it than with other varieties of getting strains totally differing from each other when buying seed from several sources.

CABBAGE.

Red and Savoy varieties are not much grown in this district though the latter are of the highest quality for home use. Amongst the early varieties, Early Jersey Wakefield and Copenhagen Market are certainly the best, the first being conical or pointed and the latter round. The Wakefield is a few days earlier than Copenhagen Market but not nearly as good a yielder. Succession is a good variety to follow these early kinds, and any good strain of the Danish Ballhead group is the best for winter use on account of its invariably good keeping qualities.

CAP ROUGE.

CARROTS.

As for garden carrots, the long varieties are not now extensively grown, because they are later than the others and require a deeper soil; they also seem to lack quality and get too coarse and fibrous. French Horn and Oxheart are very good early ones, whilst Half Long Chantenay is a standard sort for the general crop.

CAULIFLOWER.

Good varieties are Early Snowball, Veitch Autumn Giant and Extra Early Paris. The last named, tried in 1915 for the first time, gave by far the largest heads and promises to beat all the others, if it continues as it has started.

CELERY.

Golden Self Blanching and Paris Golden Yellow are two of the best strains of the white sorts, the first being now more extensively grown than all the other varieties combined. But for a real *connoisseur,* the brittle and high quality green Giant Pascal is the best, besides being a good keeper.

CORN.

Early Malcolm, out of thirty varieties and strains tested, was still at the head for the number of ears produced; it was also the earliest of all the sweet varieties and only a day later than the common flints used in the district. Other varieties are Golden Bantam, a general favourite, for mid-season, and Country Gentleman, for a late sort.

CUCUMBERS.

Chicago Pickling is one of the best small varieties whilst a good strain of White Spine cannot be much improved upon to eat green. But there is often more difference between strains than between varieties, in cucumbers, and one must be sure of getting a good one.

LETTUCE.

Lettuce is sometimes classified as (a) cos, (b) curled, (c) head. The first, though in great demand in some of the large European cities, is hardly known in this country. The second is not a prime favourite on Eastern markets, except for forcing, and Grand Rapids is by far the most popular for this purpose. The "head" or "cabbage" sorts may be subdivided into "butter" and "crisp." The first, that is the "butter," are mostly sought after, and varieties such as Dreer All Heart, Iceburg, and Victoria generally give good satisfaction.

ONIONS.

Red Wethersfield again showed itself the most productive variety, and as it is generally a good keeper, it is highly recommended. Yellow Globe Danvers is all right for those who prefer an onion of this colour, and for the person who places size and appearance foremost it is hard to beat Prize Taker.

PARSLEY.

The new variety from Denmark, Dwarf Perfection, was still so much ahead of all others that it seems nearly in a class by itself, and should supplant all others if it continues to lead for a couple of years more.

PARSNIPS.

A couple of varieties are tried each year alongside of old reliable Hollow Crown, but the latter nearly always comes out first for yield.

PEAS.

Thirty-two varieties and strains were tried and, as usual, Gregory Surprise was the earliest. As it is of high quality and a fairly good yielder, it is strongly recommended for this district. It can be sown at intervals so as to secure a constant crop of green peas, or it can be sown at the same time as Thomas Laxton, McLean Advancer and Stratagem, which combination will also give a supply of fine edible peas from early to late in the season.

RADISHES.

Two varieties which do very well here are Turnip Scarlet White Tipped and White Icicle. The former sells better on account of its colour, but the latter has the advantage of remaining longer without getting woody. A sort which is recommended for early use in hotbeds is Rosy Gem. Radishes can often be grown on ground where celery or tomatoes are to be planted and can be cut out of the way in time, if put in at the very beginning of the season.

SQUASH.

For a heavy yielder nothing is ahead of the Long Vegetable Marrow. To persons looking to quality first, the Crooknecks will no doubt appeal, whilst for those who only have a limited area at their disposal, the Long White Bush Marrow is just the thing. The demand for these, in this district, is very limited.

TOMATOES.

A variety tried here for the first time, Reine des Hâtives, was the earliest, followed by Danish Export which held the same distinction last year. Alacrity was five days later than the first and three days later than the second. A strain of Sparks Earliana gave the largest quantity of ripe fruit. This strain, closely followed by Reine des Hâtives, gave the largest quantity of ripe fruit during the first month, which is an important consideration. Alacrity has shown itself so uniformly early and productive during the last five years that it is yet considered the most valuable variety for this district.

TURNIPS.

Consumers want the purple tops and of these, Skirving was the heaviest yielder. For earliness, none of them came near Extra Early White Milan, a very good white sort.

Cap Rouge.

OTHER VEGETABLES.

Besides the above, the following were grown and can be recommended for this district: Broccoli, White Cape; Brussels Sprouts, Improved Dwarf Paris Market; Celeriac, Large Smooth Prague; Egg Plant, New York Improved; Endive, Green Curled; Kale, Dwarf Green; Kohl Rabi, Large White Vienna; Leek, English Flag; Muskmelon, Montreal Market; Pepper, New Neapolitan; Pumpkin, Large Field; Salsify, Long White; Spinach, Victoria.

CULTURAL EXPERIMENTS WITH VEGETABLES.

Cultural experiments are going on at this Station with beans, beets, cabbage, carrots, cauliflower, celery, onions, parsnips, peas, potatoes, tomatoes, turnips. None of these experiments has, however, been started long enough to warrant definite conclusions.

BEANS.

The experiment is to find out whether it is better to plant a number of varieties of different seasons at the same time or to plant the same variety at intervals. On May 25, Round Pod Kidney Wax, Stringless Green Pod, Early Red Valentine, and Refugee were planted, whilst Round Pod Kidney Wax was planted again on June 1, 8, and 15. The yield was about the same one way or the other in 1915, and so was the length of the season during which "snap" beans could be had.

BEETS.

The experiment is to find the best distance at which to thin plants: 2, 3, or 4 inches. This will have to be continued a number of years before figures can be given.

CABBAGE.

The experiment is to find out the best practical method of protecting plants from root maggots, when set out. One lot received no protection, and only 17 per cent was marketable; a second lot was protected with tar-paper discs, and 80 per cent was marketable; the last lot was protected by cheap cheese cloth individual covers, and it also gave a crop of 80 per cent marketable heads. The results of one year would tend to show that the best practical protection is the tar-paper disc, as it is a great deal cheaper than the cheese cloth cover.

CARROTS.

The experiment is to find the best distance at which to thin plants: 1½, 2, or 3 inches. This will have to be continued a number of years before figures can be given.

CAULIFLOWER.

With this vegetable there are two experiments: (a) to find the best practical method of protecting the plants against root maggots; and (b) to find the best way of protecting the heads. For the first experiment tar-paper discs and individual cheese cloth covers were used, whilst for the latter, toothpicks, also twine served to tie the leaves which, in another lot, were simply broken and brought over the heads. None of the methods in either of the experiments gave much satisfaction, so that the results of a few more years will have to be waited upon.

CELERY.

The experiment is to find out the best method of blanching. Four lots were used: (a) Planted in trenches and blanched with soil; (b) planted on the level and blanched with soil; (c) planted on the level and blanched with paper; (d) planted on the level and blanched with boards. The lot blanched with boards gave the highest yield, followed by the one planted on the level and blanched with soil. However, this is only the result of one year and should certainly not be taken as definite.

ONIONS.

The experiment is to compare the earliness and the yield of a crop obtained from: (a) seed sown in the open, (b) plants started under glass and transplanted to open ground, (c) onion sets. The results of 1915 show that the early crop is obtained from the sets and the heavy yield from transplantations.

PARSNIPS.

The experiment is to find the best distance at which to thin plants: 2, 3 or 4 inches, but it will have to be continued for a few years before definite conclusions can be reached.

PEAS.

The experiment is to find out whether it is better to plant a number of varieties of different seasons at the same time or to plant the same variety at intervals. On May 22, Thomas Laxton, Gradus, McLean Advancer, and Stratagem were planted, whilst Thomas Laxton was planted again on May 29, June 5 and 12. The different varieties sown the same day gave a larger yield than the same variety sown at different dates.

POTATOES.

There were two experiments with potatoes: (a) kinds of sets (b) treatment of sets with gypsum before planting. In the first one, whole small potatoes, about two inches in diameter were compared with sets cut to 1, 2, and 3 eyes, with the result that for the same area there were respectively 72, 11, 62 and 92 pounds of marketable tubers from each lot in the above mentioned order. In the second one, sets treated with gypsum previous to planting gave nearly 25 per cent more potatoes than the untreated lot. This, however, is only the result of one year and should certainly not be taken as definite.

TOMATOES.

The cultural experiments with tomatoes consisted of comparing methods of: (a) starting plants, (b) pruning, (c) training, (d) ripening green or partly ripe fruit. In experiment (a) plants pricked twice before setting out gave, for a certain area, 152 pounds of ripe fruit, whilst those pricked once gave 160 and those not pricked at all gave 130. In experiment (b) the lot pruned to one stem gave 434 pounds of ripe fruit, whilst the lot pruned to two stems gave 597 pounds. In experiment (c) the lot left lying on the ground, contrary to expectations, gave more ripe fruit than the two lots which were tied to wires and to stakes; of these, the latter was the better. Two things must be remembered about this experiment: that it is the result of only one year, and that Earlianas were used and they certainly require less staking than mostly any variety. In experiment (d) there was very little difference between the three lots which were put to ripen outside in a ventilated glass-covered box, inside on shelves away from the sun, or in tightly covered boxes.

CAP ROUGE.

PLANT BREEDING.

This consists in selection only. In vegetables, work is done with beans, beets, cabbage, corn, cucumber, lettuce, muskmelon, onion, parsnip, peas, pepper, potatoes, radishes, squash, tomatoes, turnips, watermelon; in fruit, with apples, plums, cherries, currants, gooseberries, raspberries, strawberries.

That some advance is made can be seen by the results obtained on rows 30 feet long with garden beans in 1915:—

Variety.	Cap Rouge Selection.	Commercial Seed.	Increase from selection.
Hodson Long Pod	30 pounds 13 ounces	17 pounds 1 ounces	13 pounds 12 ounces.
Refugee	21 " 5 "	11 " 12 "	9 " 9 " .
Stringless Green Pod	13 " 8 "	12 " 7 "	1 " 1 " .
Wardwell Kidney Wax	22 " 7 "	19 " 7 "	3 " 0 "
Total	88 pounds 1 ounces	60 pounds 11 ounces	27 pounds 6 ounces.
Average	22 " 0 "	15 " 3 "	6 " 13 "

The average increase of 6 pounds 13 ounces for each variety per row of 30 feet corresponds to an increase of about 106 bushels per acre or a little more than 50 per cent of what the total crop should be to be a paying one, under average circumstances.

In corn, a Cap Rouge selection of Early Malcolm was the highest yielder amongst thirty varieties and strains tried in 1915, and it is from a selection of 1913 which was the heaviest yielder that year. It seems that blood tells for plant as well as for animal life.

In peas, both the heaviest yielder and the earliest ready for market were Cap Rouge selections.

Quicker results might sometimes be obtained, for yield and earliness, if any plant was used. But what is selected must be healthy and true to type, which means that not a few are rejected.

SEED GROWING.

Seed of a great number of varieties of vegetables and flowering plants has been successfully grown at this Station. Amongst the former may be mentioned beans, beets, cabbage, carrot, corn, cucumber, egg plant, lettuce, muskmelon, onion, parsnip, peas, pepper, pumpkin, radish, spinach, squash, tomatoes, turnip, watermelon; and amongst the latter can be named: acroclinium, alonsoa, alyssum, antirrhinum, aster, balsam, bellis perennis, brachycome, calendula, corn flower, clarkia, coreopsis, cosmos, delphinium, dianthus, dimorphotheca, eschscholtzia, gaillardia, helichrysum, iberis, kochia, sweet peas, lavatera, linum, lobelia, lupinus, lychnis, malope, matthiola, mimulus, nemesia, nicotiana, poppy, petunia, phlox, portulaca, mignonette, salpiglossis, salvia, scabiosa, French marigold, nasturtiums, verbena, pansy, zinnia.

Cap Rouge.

That home-grown seed compares favourably with commercial seed is well shown by the following table giving yields of peas for rows of 30 feet:—

Variety.	Cap Rouge seed.	Commercial seed.	Increase from C. R. Seed.
	Quart.	Quart.	Quart.
Advancer	2·50	2·25	0·25
American Wonder	1·75	0·75	1·00
Dainty Duchess	4·00	3·50	0·50
Early Giant	2·25	1·50	0·75
Gradus	2·25	0·75	1·50
Heroine	3·25	2·75	0·50
Juno	2·75	2·75	0·00
Quite Content	3·25	2·50	0·75
Stratagem	2·75	1·50	1·25
Sutton Excelsior	3·50	2·75	0·75
The Lincoln	3·25	2·75	0·50
Average	2·86	2·16	0·70

This is an increase of 32 per cent, probably due to the fact that the home-grown seed was acclimated as in this case there was no selection and both kinds of seed produced strong plants. It must be remarked that the above commercial seed came from probably the five best known seedsmen of England and the United States.

Of the flower seed grown at Cap Rouge, it can truthfully be said that about 75 per cent of the varieties produced bloom which could compare favourably with that of plants from commercial seed, and in nearly every case, the home-grown seed germinated more quickly and produced stronger plants than the commercial seed.

ORNAMENTAL GARDENING.

Hundreds of annuals, perennials, shrubs, and trees are on trial and greatly add to the natural beauty of the Station grounds. Amongst the varieties which are recommended to farmers are the following:—

Annuals.—Antirrhinums (intermediate), saters, candytuft, coreopsis, phlox, poppy (Shirley).

Perennials.—Aquilegias, *Arabis albida,* campanula, delphiniums, hollyhocks, lupines, poppy (oriental);

Shrubs.—Hydrangea paniculata, Spiraea Van Houttei;

Hedges.—Rhamnus Frangula, Thuya occidentalis;

Roses.—Rosa rugosa;

Bulbs.—Narcissi, tulips.

The annuals were a little better than the average, though the blooms were somewhat small on account of the drought of midsummer; the perennials were mostly superior to what they previously were and were not very adversely affected by the dry weather; the growth of the shrubs and trees was very satisfactory; the hedges did well and were cut back for the first time since their plantation in 1911; the roses bloomed profusely and some of them until very late, the drought having less effect on them than on other flowering bushes; the bulbs were better than in 1914 and about an average of what they were for five years; the lawns, which were brown during the dry and warm weather of midsummer, soon recovered and were luxuriantly green when precipitation became normal in the autumn.

Cap Rouge.

DISTRIBUTIONS.

A total of 714 apple trees, 147 currant and gooseberry bushes, 1,452 raspberry canes, 3,500 strawberry plants, 2,181 packages of vegetable seed, 3,064 packages of flower seed, with 564 flowering plants was sent out for distribution during the year. With each lot is sent a form to be filled in by the person who receives the consignment regarding the adaptability of the variety as to that particular place. The names of all those who do not answer these questions are taken off the lists, so that only interested parties receive seeds, plants or trees more than one year. The reports from the co-operators are of benefit to them as they must observe the growth and condition of what is sent to them, and also to the Station on account of the varied information which is obtained from different parts of the district. Last, but not least, good farmers are supplied with the varieties which have done very well here and which they can propagate for themselves and for others with great profit.

EXHIBITIONS.

Flowers, fruit and vegetables grown at Cap Rouge were shown at the two largest exhibitions in Quebec—Three Rivers and Quebec city—besides at four county shows, and at four New England fairs. What was sent to the latter was for the Department of the Interior, four special first prize ribbons being awarded, and a diploma was received from Three Rivers and Quebec. Whilst everything was done to satisfy the aesthetic point of view, the educational side was never forgotten. Competent men were constantly in attendance at all exhibitions held in the province of Quebec and a great many farmers showed their interest by asking questions and entering their names so as to receive the publications issued in Ottawa.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT, J. A. McCLARY.

The season of 1915 was, on the whole, fairly favourable for the production of horticultural crops. There was a rather heavy precipitation during the fruiting season of the strawberries, and quite heavy rainfalls later on during the season. There were two dry spells, but the drought was not of long duration, and consequently there was little, if any, appreciable damage done to the crops.

TREE FRUITS.

APPLES.

During the spring of 1915 extensive work was carried out in connection with establishing the orchards on the farm. This was by no means a small task but was accomplished very satisfactorily.

There were two large apple orchards planted, one to be known as the "Cultural Orchard" and the other as the "Variety Apple Orchard."

The Cultural Orchard is situated west of the Cookshire road, and extends back to the high banks of the St. Francis river. It contains 869 trees of sixteen of the best commercial varieties of apples, and occupies 10·5 acres of land.

This orchard site is of a slightly rolling nature, with a decided southwestern exposure. This may not be the best exposure for an orchard but the soil and site were more suitable than elsewhere. The soil is, in most parts, of a sandy nature, with a clay or gravel subsoil. In two or three places the soil runs into heavy clay but the trees so far seem to thrive as well on this heavy soil as they do on the lighter portions, although on the clay they are liable to grow too late in the autumn and be injured by winter.

As the site is high and rolling it was deemed unnecessary to put in an extensive system of under-drainage. However, a tile was laid through one corner where the land is heavy and low.

All the varieties did exceptionally well, having good stock, carefully selected and packed, and heeled in upon arrival at the farm until planting time. Only six trees out of the 869 failed to grow.

The following is a list of the varieties including the number of trees of each variety.

Standard Trees.—McIntosh, 173; Fameuse, 92; Bethel, 37; Alexander, 21; Wolf River, 20; Blue Pearmain, 20; Scott Winter, 19; St. Lawrence, 19; Langford Beauty, 19; Lowland Raspberry, 19.

Fillers.—Wealthy, 113; Milwaukee, 96; Dudley, 89; Duchess, 56; Yellow Transparent, 38; Crimson Beauty, 38.

Variety Orchard.—The variety apple orchard is situated on the rolling lands at the north side of the horticultural area, and east along the Cookshire road from the vegetable plots.

This orchard is made up of 364 trees of 109 varieties. Some of the varieties have been grown commercially, while the larger portion of the trees are new varieties from the Central Experimental Farm, and although their performance is known there, it is yet to be determined whether they will prove satisfactory here.

The orchard is planted on the "square" system, with seven standard trees in each row, and two trees each of three varieties used in each row as fillers, making thirteen trees per row and 28 rows in the orchard.

During the season the trees made remarkably good growth, and entered winter conditions in excellent shape.

From the time of planting in May until July 15 the ground for a distance of 4 feet on each side of the rows of trees was kept cultivated, after which a cover crop of rape was sown. This cover crop grew very rank and covered the ground splendidly by late autumn. However, the growth was so rank that the rape had to be removed from around the trees for a distance of 18 inches to allow the trees to ripen properly. This was done in September.

The following is a list of the standard and filler trees used: Seven trees of each of the following varieties: Montreal Peach, Charlamoff (Pointed Pipka), McMahan, and Early Strawberry.

The following is a list of the trees received from the Central Farm, seven of each variety: Galetta, Joyce, Lobo, Horace, Atlas, Ramona, Severn, Glenton, Galena, Marcus, Thurso, Luke, Mendel, Danville, Rocket, Donald, Niobe, Nestor, Rosalie, Tasty, Gerald, Ascot, and Grover. Eight trees of each of the following varieties: Crusoe, Battle, Melba, Pedro, and Petrel.

List of fillers, two trees of each:—

Beginning nearest Cookshire Road—

Pinto (O-1363).
Nile (O-1377).
Pinto (O-1378).
Sandow (O-1388).
Bingo (O-1395).
Elmer (O-1396).
Radnor (O-1406).
Kildare (O-1420).
Monitor (O-1422).
Ripon (O-1424).
Kim (O-1425).
Service (O-1451).
Cobalt (O-1468).
Bruno (O-1472).
Norah (O-1487).
Rochelle (O-1494).
Walter (O-1495).
Canada Red (O-1496).
La Victoire (O-1497).
Moscow Pear (O-1502).
Anis (O-1540).
Keen Crimson (O-1541).
Anisim (O-1542).
Consort (O-1198).
Blushed Calville (O-1223).
McMahan (O-1216).
Seedling from W. Judge (O-1264).

Second Lot of 2 from Cookshire Road—

Carno (O-1544).
Nemo (O-1550).
Johnson Seedling (O-1555).
Trenton (O-1204).
Baxter (O-1219).
Sorel (O-1232).
Granby (O-1233).
Rouleau (O-1563).
Shaffner Special (O-1567).

Third Lot of 2 trees each from Cookshire Road—

Jewel x Tetofsky (O-1513).
Jewel x Rideau (O-1514).
Jewel x Rideau (O-1516).
Margery (O-1517).
Trail (O-1518).
Ruth (O-1519).
Pyrus baccata x Tetofsky (O-1520).
Northern Queen x Rideau (O-1521).
James (O-1522).
Pioneer x McIntosh (O-1523).
Pioneer x McIntosh (O-1524).
Jewel x Rideau (O-1525).
Northern Queen x Rideau (O-1526).
Martin (O-1527).
Jewel x Simbirsk (O-1528).
Pyrus prunifolia x Red Astrachan (O-1529).
Northern Queen x Rideau (O-1530).
Jewel x Tetofsky (O-1531).
Columbia (O-1532).
Pioneer x McIntosh (O-1533).
Pioneer x McIntosh (O-1534).
Jewel x Rideau (O-1535).

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Fillers from other nurseries, two of each variety:

Blue Pearmain.
North Western Greening.
Tolman.
Arctic.
Muskoka Beauty.
Salome.
Gypsy Girl.
Queen of the North.
American Golden Russet.
Hibernal.
Scarlet Pippin.
Astrachan.
Jones Red Snow.
Queen of North.
Winter St. Lawrence.
Winter Arabka.
Excelsior (1).
Montreal Beauty (Crab Apple).
Martha (Crab Apple).
Whitney (Crab Apple).

CHERRIES, PEARS, AND PLUMS.

The work in these orchards was not very extensive as only a few varieties were planted in each orchard. These orchards are arranged in blocks adjoining each other and are located on the south side of the variety orchard towards the west end of the horticultural area.

The site is on a knoll with a southern and southwestern exposure. The soil is sandy in places, but runs into heavy clay further back.

For convenience of cultivation, the trees in the orchard were planted 15 by 20 feet apart so that the apple orchard and plums, pears and cherries could be cultivated without any inconvenience.

Cherries.—Cerise d'Ostheim, 6; Herzformige Weichsel, 5; Vladimir M., 3; Dyehouse, 4; Vladimir, 4; Olivet, 4; Wragg, 4.

Pears.—Zuckerbirne, 2; Grev. A. W. Mettekes, 2; Kurskaya Pear, 2; Lemon Pear, 3; Bessemianka, 7; Vermont Beauty, 7.

Plums.—Snelling Seedling, 15; Cheney Seedling, 12; R. B. White Seedling, 33; Caro Seedling, 2; Consul Seedling, 3; Wolf, 5; Hawkeye, 5; Weaver, 5.

SMALL FRUITS.

RASPBERRIES.

This plantation is located in the same range with the currants and gooseberries. The rows of raspberries are planted between the currants and gooseberries with the object of keeping the varieties of raspberries from mixing. The arrangement allows the rows to be 12 feet apart alternating with other bush fruits.

All the varieties did well and showed every possibility of their wintering in good condition.

The varieties are as follows: Herbert, King, Count, Sarah, Brighton, and Eton.

GOOSEBERRIES.

A few varieties were planted, those that arrived and were planted in good time making comparatively good growth.

The varieties are as follows: Downing, Whitesmith, Carrie, Josselyn, Houghton, and Oregon Champion.

CURRANTS.

The currant plantation contains 23 varieties, planted in rows 12 feet apart and 6 feet apart in the rows, there being six bushes to each variety.

To simplify record work the plantation is divided into ranges 30 feet wide which enables the records being taken on each separate variety in a range, and greatly facilitates the work.

LENNOXVILLE.

All the varieties did well, they are as follows:—

Black.—Magnus, Collins, Prolific, Clipper, Eclipse, Eagle, Boskoop Giant, Buddenborg, Kerry, Victoria Black, Saunders, Climax, Lee Prolific.

Red.—Pomona, Victoria Red, Wilder, Cumberland Red, Red Dutch, Cherry, Greenfield, Rankins Red, Red Grape, Perfection, Fay.

White.—Large White, White Grape, White Cherry.

GRAPES.

The vineyard is located at the extreme west end of the horticultural area fronting on the Cookshire Road, just opposite the cultural orchard. The field is triangular in shape and contains approximately two acres.

The soil is of a variable nature being quite heavy clay soil in places, running into gravel on the higher parts.

Only eight rows of standard vines were planted last spring, but they did very well. They were planted in rows nine feet apart, and ten feet apart in the row.

A cover crop of beans was sown between the rows of grapes, and the land kept thoroughly cultivated as long as it was practicable. As soon as the beans were ripe they were carefully harvested and thrashed and yielded approximately 17 bushels. They were sold for $4.25 per bushel. The vines were pruned and covered with soil on November 2 and 3.

The varieties with number of plants of each, are as follows: Brighton, 30; Brant, 6; Barry, 2; Campbell Early, 2; Champion, 2; Concord, 2; Delaware, 3; Hartford, 2; Herbert, 6; Lindley, 28; Moore Early, 30; Moyer, 30; Moore Diamond, 6; McTavish, 3; Niagara, 2; Peabody, 4; Starr Early, 3; Salem, 2; Vergennes, 6; Wilkins, 14; Worden, 2; Yomago, 4.

STRAWBERRIES.

The twenty-five varieties planted out in 1914 wintered very well considering the severity of the winter. Just as soon as the danger of heavy freezing was past the straw mulch was removed from the plots and the plantation cleaned up.

Some of the new varieties from Ottawa did very well, in fact some of these varieties yielded very large crops, but it was noticed that the quality of the fruit was quite inferior to other varieties which yielded smaller crops. The varieties which proved best are as follows: Valeria, Portia, and Desdemona.

The performance of each variety is given in the following table:—

Variety.	First ripe fruit.	Date last picking	Rust.	Size of fruit.	Total yield in lb.	Total yield in lb. per acre.	Remarks.
Ruby...........	June 29.	July 21.	S.	L.	24·60	11,162	The fruit was very large, irregular and coarse, being soft renders it useless for shipping.
Greenville.......	" 26.	" 21.	M.	M.	12·734	5,778	Good quality.
Wm. Belt........	" 28.	" 21.	M.	M.	7·5	3,403	"
Warfield.........	" 24.	" 20.	M.	S.	19·05	8,642	"
Buster..........	" 28.	" 20.	M.	M.	14·97	6,791	"
Excelsior........	" 20.	" 6.	M.	M.	1·578	716	Medium quality.
Parson Beauty...	" 29.	" 20.	M.	M.	13·625	6,182	Good quality.
Sample..........	" 28.	" 20.	M.	M.	7·906	3,587	"
Pocomoke.......	" 27.	" 19.	M.	M.	13·875	6,295	"
Senator Dunlap..	" 23.	" 19.	S.	M.	5·9375	2,694	"
Splendid	" 26.	" 19.	M.	M.	5·25	2,382	"
Beder Wood.....	" 22.	" 19.	M.	M.	9·34375	4,239	"
Miranda.........	" 29.	" 21.	S.	L.	28·375	12,875	Large coarse fruit, very soft, sour.
Bubach..........	" 29.	" 17.	S.	M.	8·047	3,651	Good quality.
Cordelia.........	" 28.	" 21.	M.	S.	18·5625	8,422	"
Desdemona......	" 28.	" 14.	M.	M.	10·34375	4,693	"
Mariana........	" 29.	" 17.	L.	M.	8·828	4,005	Medium quality.
Valeria.........	" 22.	" 14.	S.	M.	13·50	6,125	Good quality, very dark red, regular and sweet.
Ophelia.........	" 28.	" 21.	S.	L.	23·3125	10,578	Large, coarse, insipid and soft.
Lovett..........	" 29.	" 20.	M.	M.	11·875	5,388	Good quality.
Hermia.........	" 29.	" 12.	L.	S.	4·3125	1,956	Small fruit, poor quality.
Portia...........	" 29.	" 20.	S.	M.	18·4375	8,366	Excellent quality, regular and fine.
Julia.............	" 29.	" 14.	M.	S.	8·65625	3,927	Medium quality.
Bisel............	" 29.	" 20.	M.	S.	21·3125	9,670	"
Glen Mary......	" 28	" 14.	L.	M.	3·3125	1,503	Good quality.

A new plantation was set out the spring of 1915, but the plants did not take very satisfactorily, and as a consequence it was found necessary to make the rows up again in August.

The following is a list of the varieties planted: Senator Dunlap, Howard No. 41, Buster, Chesapeake, Sample, Warfield, Wm. Belt, Haverland, Stevens Late Champion, Williams Improved, Three W's, Joe, Lovett Early, Glen Mary, Parson Beauty, Pocomoke, Superb, Americus and Progressive. The last three varieties are of the everbearing sorts.

LENNOXVILLE.

VEGETABLES.

GARDEN PEAS.

Sixteen varieties of peas were sown, a good stand of each variety was obtained. The varieties were grown in rows 100 feet long, and from 50 feet of each row the green pods were picked. The remaining 50 feet was allowed to develop and ripen seed.

The following are the results of the test:—

Variety.	Date sown.	Ready for use.	lb. of green pods.	lb. of ripened seed.	Remarks.
Gregory Surprise	May 6.	July 10.	12·0	2·0	Good quality, shy bearer.
Thos. Laxton	“ 6.	“ 13.	21·0	7·0	Excellent quality.
Gradus	“ 6.	“ 13.	22·0	1·0	“
American Wonder	“ 6.	“ 13.	17·0	2·0	Medium quality.
Stratagem	“ 6.	“ 13.	9·5	1·5	“
Gradus	“ 6.	“ 15.	9·5	1·0	“
Early Giant	“ 6.	“ 17.	11·5	1·0	“
Premium Gem	“ 6.	“ 19.	16·5	3·5	Good quality.
Dainty Duchess	“ 6.	“ 20.	27·0	1·0	“
Sutton Excelsior	“ 6.	“ 20.	35·0	3·0	“
Quite Content	“ 6.	“ 21.	18·5	3·0	“
Telephone	“ 6.	“ 26.	17·5	3·0	“
Advancer	“ 6.	“ 29.	13·5	3·0	“
Heroine	“ 6.	“ 31.	36·0	4·0	“
Juno	“ 6.	“ 31.	21·0	4·0	“
Lincoln	“ 6.	“ 31.	19·0	3·0	“

BEANS.

Ten varieties of beans were sown in the garden in rows 50 feet long and 30 inches apart. All the varieties did very well, but were injured somewhat by bean anthracnose.

Variety.	Ready for use.	Quality.	Weight of green beans in pod.
			lb.
Red Valentine	August 14.	Good	21·0
Extra Early Refugee	“ 14.	“	19·5
Extra Early Valentine	“ 14.	“	18·5
Wardwell Kidney Wax	“ 14.	“	14·0
Stringless Green Pod	“ 14.	“	12·5
Bountiful	“ 17.	“	16·0
Fordhook Favorite	“ 17.	Medium	8·5
Valentine	“ 17.	Good	8·0
Grennell Rustless Wax	“ 17.	Medium	7·0
Refugee Green Pod	“ 17.	“	3·0

RADISH.

The varieties of radish were planted the 7th of May and were ready for use the 15th of June.

The varieties are as follows and in order of merit: White Icicle, Scarlet Turnip White Tipped and Rosy Gem.

LETTUCE.

Seven varieties were under test, the seed was sown in the garden the 6th of May. All the varieties did well, but the two which were considered of superior quality are Grand Rapids, and Dreer All Heart.

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CELERY.

Five varieties of celery were under test. The seed was sown in flats in the hotbed the 5th of April, and the plants pricked out once, and on June 20 transplanted to the drills.

All the different varieties did well considering the condition of the soil.

Different methods of blanching were tried out, soil, boards and pliable material being used. It was found that the boards gave quicker and more uniform results for early market and that the resulting products was much cleaner. The pliable material gave similar results, but it was found that the plants should be twice as numerous in rows to give best results.

For the later varieties, the earth mound system in drilling up is much to be preferred to either of the former methods.

The varieties which did the best are as follows: Golden Self Blanching, White Plume and Evans Triumph.

CARROTS.

The season was very favourable for the carrot crop. Four varieties were sown in the garden May 18 in rows 30 feet long and 30 inches apart, and thinned to 1½ inches apart in the rows. They gave only medium results and are as follows:—

Variety.	Date of Sowing.	Ready for use.	Date of Harvest.	Weight.
				Lb.
Chantenay Half Long	May 18	Sept. 1	Oct. 28	35
Improved Danvers Half Long	" 18	" 1	" 28	25
Nantes Half Long Scarlet	" 18	" 1	" 28	20
Early Scarlet Horn	" 18	" 1	" 28	10

BEETS.

Six varieties of beets were sown May 16 in rows 30 feet long and 30 inches apart, and thinned to 2 inches apart in rows. All the varieties did well, but the following were considered to be of superior quality: Black Red Ball, Ruby Dulcet, and New Meteor.

Variety.	Date of Sowing.	Ready for Use.	Date of Harvest.	Weight.
				Lb.
Cardinal Globe	May 18	July 28	Oct. 30	24
Eclipse	" 18	" 28	" 30	21
Crosby Egyptian	" 18	" 28	" 30	20
Ruby Dulcet	" 18	" 28	" 30	20
Black Red Ball	" 18	" 28	" 30	19
New Meteor	" 18	" 28	" 30	17

LENNOXVILLE.

One variety of beets, Early Model, was used in the cultural test. The seed was sown in one row 100 feet long May 18. The row was divided into three parts and the plants thinned to 2, 3, and 4 inches apart.

The results obtained proved beyond doubt that those thinned to 4 inches apart were more uniform and of much better quality.

PARSNIPS.

Two varieties of parsnips were tried out and very satisfactory results obtained. They are as follows and in order of merit: Vaughan Intermediate and Hollow Crown.

CUCUMBERS.

Seven varieties of cucumbers were started in flats in the hotbed, April 19, pricked out into pots and transplanted June 15. Three hills of each variety were planted 8 by 8 feet apart with three plants to the hill.

Variety.	Ready for use.	Size.	Quality.	Weight. in lb.
Davis Perfect	July 9	Medium	Good	74·5
Fordhook Famous	" 9	Large	Medium	58·0
Giant Pera	" 9	"	"	46·5
Peerless White Spine	" 9	Medium	Good	41·5
Prize Pickle	" 17	"	"	30·0
Cool & Crisp	" 28	"	"	36·0
Extra Early Russian	Aug. 13	Small	"	30·5

RHUBARB.

Rhubarb seed sown in the garden June 16 made good growth and was ready to be transplanted by August 21.

PEPPERS.

Four varieties of peppers were started in the hotbed April 10, pricked out and transplanted to the garden June 16.

The varieties were planted in rows 30 feet long and 30 inches apart, and the plants 18 inches apart in the row.

The following table will give the comparative results:—

Variety.	Ready for use.	Quality.	Weight in lb.
Long Red Cayenne	Sept. 10	Good	4·2
Red Chili	Oct. 4	"	4·0
Hot Bell	" 4	"	3·4
New Neapolitan	" 4	"	4·5

SWEDES FOR TABLE USE.

This crop was a total failure as a result of the prevalence of bacterial rot.

LEEK.

Two varieties were tested, to determine the most approved method of growing, as well as to ascertain the most desirable variety.

Seed was grown in the garden May 20 in rows 50 feet long and 12 inches apart, allowed to develop and later thinned to 3 inches apart in the row.

For comparison seed was sown in the flats in the hotbed April 10, pricked out, and on June 3 transplanted to the garden in rows similar to the former test.

Variety.	Where Started.	Date of Sowing.	Date of Harvest.	Weight.
				Lb.
English Flag	Garden	May 20	Oct. 21	8
English Flag	Hotbed	April 10	" 21	10
French Carentan	Garden	May 20	" 21	7
French Carentan	Hotbed	April 10	" 21	8

SALSIFY.

Only one variety was under test, "Long White," which variety gave a very good yield.

PARSLEY.

One variety was sown, "Double Curled," it made splendid growth during the season.

EGG PLANT.

The seed was sown in the hotbed April 10, pricked out May 1, and transplanted to the garden June 16. One row 30 feet long 20 plants, 18 inches apart in the row.

The variety used was Improved New York Spineless; three small sized fruits were obtained.

ONIONS.

Two varieties were used, Extra Early Red and Yellow Globe Danvers in the following experiments to ascertain the most approved method of growing onions.

Onions grown from seed sown May 17 in the open and thinned to 1, 2, and 3 inches apart, each variety was to be sown at the rate of 3 ounces per 50 feet in rows 100 feet long, 12 inches apart and treated as follows:—

33⅓ feet thinned to 1 inch apart.
33⅓ " " 2 "
33⅓ " " 3 "

It was found that in the case of both varieties the yield was larger from those thinned to 3 inches apart. Both varieties gave very satisfactory results.

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(2) Grown from young plants started in the hotbed and transplanted to the open ground after the danger of frost injury was past. The seed was sown in the hotbed April 12, pricked out the 28th of the same month and transplanted into rows 100 feet long, 12 inches apart and 3 inches apart in rows on June 9.

There was very little difference in the yield of these two varieties. However, the difference was in favour of the Extra Early Red.

It was noted that the onions grown from the seed sown in the open ground gave better results than those started in the hotbed and transplanted.

(3) Through an oversight the experiment with sets was not planted.

(4) Growing onion sets (two varieties). Yellow Globe Danvers and Large Red Wethersfield were used.

The seed was sown in the open May 7, in rows 100 feet long, 12 inches apart, at the rate of 200 seeds per foot. This work was a great success. Yellow Globe Danvers yielded 39 lbs. of small onions from the row of which fully 45 per cent were of the desired size, one-half to one-quarter inch in diameter. Large Red Wethersfield yielded 58 pounds of which 40 per cent were of the desired size.

(5) Control of the Onion Root Maggot (*Phorbia ceparum*). The onion root maggot did some damage to the crop but nothing serious. Carbolic emulsion and hellebore and water were applied; however, the results were negative with both preparations.

(6) Fall versus spring preparation of the soil was not tried.

(7) Onion seed was sown August 11, 1915, the results of which will be recorded later. Two varieties were used, Extra Early Red and Giant Prize Taker.

Variety Test.

Very satisfactory results were obtained from the eight varieties of onions in the variety test as per the following table. These were planted in rows 100 feet long, 12 inches apart, and 3 inches apart in the row.

Variety.	Colour.	Quality.	Weight.
			Lb.
Extra Early Red	Red	Good	33
Giant Red Wethersfield	"	"	30
Red Globe	"	"	27
White Globe	"	"	23
Yellow Globe Danvers	"	"	20
Dark Red Beauty	"	"	20
Yellow Globe	"	"	19
Red Wethersfield	"	"	17

CABBAGE.

Ten varieties of cabbage were tried in the variety test. The seed was sown in the hotbed April 10, pricked out May 18 and transplanted to the open ground June 2. Two fifty-foot rows of each variety were planted 30 inches apart and the plants 24 inches apart in the rows.

The plants used in this experiment were seriously damaged by cutworms, so that very unsatisfactory results were obtained from the test.

The following are the varieties: Early Jersey Wakefield, Paris Market, Danish Summer Ballhead, Nofalt, Fottler Improved Brunswick, Amager Danish Roundhead, Red Danish Stonehead and Red Danish Delicatesse.

LENNOXVILLE.

It was found that Paris Market was equal to Early Jersey Wakefield in quality and earliness. Some good heads were obtained from Flat Swedish, and the weight of five average heads was 10·5 pounds. Both varieties of red cabbage did well.

In the cultural test two varieties of cabbage were used. The seed was sown April 10, pricked out and planted June 2. Different methods were employed to control the root maggot, i.e.: (1) Tar felt paper discs; (2) cheesecloth protectors over each plant; (3) unprotected, as a check on the other two methods.

The results are as follows:—

Variety.	Quantity Planted.	Protector Used.	Result.	Weight of 10 average heads.
Early Jersey Wakefield......................	25	Tar Felt Disc.......	Good.....	40 lb.
" "	25	Cheese Cloth........	Poor......	No good heads.
" "	25	Unprotected.........	"	"
Copenhagen Market........................	25	Tar Felt Disc	Good.....	56 lb.
" "	25	Cheese Cloth.......	Poor......	No good heads.
" "	25	Unprotected........	"	"

CAULIFLOWER.

The variety test was seriously injured by cutworms, therefore, the results were not recorded.

CULTURAL TEST.

Two varieties of cauliflower were sown in the hotbeds April 10, pricked out and transplanted June 25.

The value of tar-felt paper discs was well demonstrated in this experiment.

Variety.	Quantity Planted.	Protector used.	Result.	Weight of 1 average head.	Weight of 10 average heads.
				Lb.	Lb.
Early Snowball....................	25	Tar felt disc........	Good.....	2	20
" "	25	Cheese Cloth........	Poor......	No good	heads.
" "	25	Unprotected........	"	"	"
Early Dwarf Erfurt..............	25	Tar felt disc.........	Good.....	1·75	17·5
" "	25	Cheese Cloth........	Poor......	No good	heads.
" "	25	Unprotected........	"	"	"

BRUSSELS SPROUTS.

One variety was used, "Dwarf Paris Market," a very good crop being obtained.

MUSKMELON.

The three varieties which gave best results were sown in flats in the hotbed April 9, pricked out into pots and planted in the garden in hills June 15.

The varieties which did the best are as follows, in order of merit: White Solid Net, Rocky Ford, Hackensack and Emerald Gem.

WATERMELON.

Four varieties were started in the hotbed April 9, pricked out into pots, and on June 15 were planted in hills in the garden. They are in order as follows: Cole Early, Improved Ice Cream and Earliest Ripe.

SQUASH.

Five varieties of squash were under test. The seed was sown April 14, in the hotbed, pricked out into pots and transplanted to the garden June 15, in hills of three, with the hills 8 feet apart. There were three hills of each variety.

Variety.	Ready for use.	Size.	Date harvested.	Yield from three hills in lb.
Long White Vegetable Marrow	Aug. 13	Large	Sept. 22	227
“ Bush Marrow	“ 13	“	“ 22	194
Delicious	“ 28	Medium	“ 22	173
Golden Hubbard	“ 13	“	“ 22	113
Crookneck Summer	“ 13	Small	“ 22	39

PUMPKIN.

Three varieties were started in the hotbed April 19, pricked out into pots and planted June 15, in hills 8 feet apart with three plants to the hill.

Variety.	Ready for use.	Size.	Date harvested.	Yield from three hills in lb.
Jumbo	Aug. 13	Large	Sept. 22	432
Large Field	“ 13	“	“ 22	263
Sweet or Sugar	“ 13	Small	“ 22	257

CORN.

Nine varieties of table corn were under test. Some of these varieties gave better results than others, although they were grown on a uniform piece of soil and received the same treatment. The seed was planted May 28, in hills 3 by 3 feet apart, there being ninety-nine hills of each variety.

Variety.	Ready for use.	Quality.	Yield from 99 hills in dozen ears.	Estimated yield per acre in dozen ears.
Early Dawn	Aug. 29	Good	1·5	55
Golden Bantam	“ 29	Excellent	17·5	651·5
Early Iowa	“ 31	Good	1	36·6
Malakoff	Sept. 2	“	17	623·2
Fordhook Famous	“ 4	“	9·5	348·3
Adams Early	“ 12	Medium	24·5	899
Pocahontas	“ 17	“	8·25	302·5
Perkins Extra Early Market	“ 20	“	·50	18·3
Early Evergreen				

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TOMATOES.

The season was quite favourable for the tomato crop. Thirteen varieties were under test. The seed was sown in the hotbeds April 10, pricked out, and transplanted June 10.

Five plants of each variety were planted 4 by 4 feet apart, and allowed to grow under ordinary field conditions. However, it was found that owing to the short quick growing season, the earlier varieties gave better results, and especially when trained to stakes or trellises.

Only the ripened fruits were harvested and weighed.

Variety.	Ready for use.	Quality.	Weight of ripe fruit in pounds.
Earliest on Earth (0 23-11)	Sept. 5	Medium	7·5
Alacrity X Dwarf Stone (0 23-54)	Aug. 24	"	24
Alacrity X Ponderosa	" 24	"	27
Alacrity 14-B	" 18	Fair	5·5
Alacrity 12-B	" 24	"	18·5
Jack Rose	" 24	"	2·5
Earliana Sunnybrook Strain	Sept. 5	Medium	5
Extra Early Wealthy	Aug. 24	Fair	1
Florida Special	Sept. 9	"	6
Prosperity	Aug. 18	Poor	4·5
Langdon Northern Adirondack No. 1	" 18	"	3·75
Chalk Early Jewel	Sept. 5	Medium	2
Round Scarlet Skin xxx Rennie Early	Aug. 18	"	9·5

Cultural Test of Tomatoes.

Comparison of culture of two varieties:—Sunnybrook Strain of Earliana and Bonny Best.

The seed was sown in the hotbeds April 10, germination between the 15th and 17th of the same month, pricked out, and planted to the open June 10. Twenty-five plants of each variety were used in each of the following tests, planted 24 by 30 inches apart.

1. Allowed to grow unpruned, lying on the ground.
2. Pruned to one stem.
2. Pruned to two stems.
(*a*) Tied to stakes.
(*b*) Tied to wires.
(*c*) Portion of foliage removed.
(*d*) Foliage left entire.

Variety.	How trained or Pruned.	Ready for use.	Quality.	Size of Fruit.	Weight in pounds.
Bonny Best	Pruned to 2 stems, on wires	Sept. 5	Medium	S.M.	12·5
Bonnybrook Str. Earliana	" 2 " "	Oct. 14	"	S.M.	16
Sunny Best	" 1 stem " foliage partly removed	Aug. 28	Excellent	M.L.	21
Sunnybrook Str. Earliana	" 1 " " "	" 7	"	M.L.	48
Bonny Best	" 1 " "	" 18	"	M.L.	76·25
Sunnybrook Str. Earliana	" 1 " "	" 7	"	M.L.	82·25
Bonny Best	" 2 stems on stakes	" 10	"	M.L.	24·50
Sunnybrook Str. Earliana	" 2 " "	" 7	"	M.L.	50·50
Bonny Best	" 1 stem " foliage partly removed	July 31	"	M.L.	76·50
Sunnybrook Str. Earliana	" 1 " " "	" 31	"	M.L.	79·25
Bonny Best	" 1 " "	Aug. 7	"	M.L.	70
Sunnybrook Str. Earliana	" 1 " "	July 31	"	M.L.	86
Bonny Best	Unpruned allowed to grow on ground	Sept. 5	Poor	S.M.	3·5
Sunnybrook Str. Earliana	" " " "	Oct. 14	"	S.M.	16

Various methods were tried in connection with ripening green tomatoes, and it was found that better results were obtained from an experiment with the green fruit left attached to the stems and placed in a moderately warm place.

POTATOES.

KIND OF SETS.

Two types of potatoes were used throughout in these experiments to ascertain, if possible, what influence the arrangement of the eyes and size of the sets might have on the yield, one type having strong buds from seed end to base.

Whole small potatoes of unmarketable size were planted in drills 30 inches apart in the rows; 66 sets were used in each case.

Whole, small potatoes.	Planted.	Marketable.	Unmarketable.	Total wt. from 66 hills.
		lb.	lb.	lb.
1a Strong buds at seed end	May 28	82·5	86	168·5
" from seed end to base	" 28	61·5	83·5	145

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Sets were cut from medium to large potatoes which had been selected for the arrangement of eyes, to three sizes, 1, 2 and 3 eyes; 66 sets were used in each case, planted in drills 30 inches apart and one foot apart in the drills.

Sets, from medium to large potatoes, 1 eye.	Planted.	Marketable.	Unmarketable.	Total wt. from 66 hills.
		lb.	lb.	lb.
1b Strong buds from seed end to base	May 28	49·5	42·5	92
" at seed end	" 28	53·25	48	101·25
Sets, from medium to large potatoes, 2 eyes.				
1c Strong buds from seed end to base	" 28	61·25	71	132·25
" at seed end	" 28	78·5	51	129·5
Sets from medium to large potatoes, 3 eyes.				
1d Strong buds from seed end to base	" 28	75	77	152
" at seed end	" 28	74	68·75	142·75

The above tables indicate that the sets cut to 3 eyes gave slightly better results. This was also noticeable in the growth of tops. The plants were more vigorous.

Potatoes.—Selection Work.

The six varieties of potatoes used in connection with the hill selection work last year, were again selected this spring and 188 hills planted. At digging time 100 hills were selected from these 188 hills, and compared with 100 hills as they came from the rows in the multiplier plots. In every case there was a marked difference in favour of the selected hills.

Another variety was added to this selection work known as "Pride of the North". It is a red potato but is excellent for table purposes.

Variety.	Date of planting.	Date of Harvest.	100 selected hills.	Unselected.
			lb.	lb.
Empire State	May 29	Oct. 8	313	210
Carman No. 1	" 29	" 8	277	190
Green Mountain	" 29	" 8	262	198
Gold Coin	" 29	" 8	253	177
Irish Cobbler	" 29	" 8	205	183
Early Ohio (red)	" 29	" 8	212	160
Pride of the North (red)	" 29	" 8	313	210

The experiment dealing with the different distances of planting gave very interesting results as can be seen by examining the following tables. However, these data are obtained from but one year's work but were done in duplicate.

Green Mountain potatoes were used throughout. The seed was uniform and clean of scab, nevertheless all seed was previously treated with mercuric chloride, and when harvested the tubers were found to be perfectly clean.

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DISTANCE of Planting.

66 sets planted 30″ by 12″ in each plot.	Date of Planting.	Date of Harvest.	Weight.
			lb.
4a Plot No. 1	May 29	Oct. 9	90·5
Plot No. 2	“ 29	“ 9	106·25
66 sets planted 30″ by 14″ in each plot.			
4b Plot No. 1	May 29	Oct. 9	88·5
Plot No. 2	“ 29	“ 9	96
66 sets planted 36″ by 12″ in each plot.			
4c Plot No. 1	May 29	Oct. 9	80·5
Plot No. 2	“ 29	“ 9	90·25
66 sets planted 36″ by 14″ in each plot.			
4d Plot No. 1	May 29	Oct. 9	100
Plot No. 2	“ 29	“ 9	123

KINDS OF CULTIVATION.

From the results obtained from the plots, it seems evident that three cultivations are preferable. To be more explicit, cultivate twice and let the hilling up act as the third cultivation.

Three cultivations.	Planted.	Harvested.	Total wt.
2a Plot No. 1	May 29	Oct. 9	117·5
Plot No. 2	“ 29	“ 9	113·5
Six cultivations.			
2b Plot No. 1	May 29	Oct. 9	111
Plot No. 2	“ 29	“ 9	105·75
Level cultivation.			
3a Plot No. 1	May 29	Oct. 9	99·5
Plot No. 2	“ 29	“ 9	110
Hilled after last cultivation.			
3b Plot No. 1	May 29	Oct. 9	93·75
Plot No. 2	“ 29	“ 9	79·25

In growing an acre of potatoes to ascertain the cost of production two varieties were used, Irish Cobbler for the early variety and Green Mountain for the late or main crop variety. One-half an acre of each was grown on a uniform piece of land.

Preparation of the soil.—Early in the fall of 1914 the land was ploughed and worked up so as to destroy weeds and prepare the soil to absorb and retain large amounts of moisture. During the winter a coat of green manure was applied, at the rate of 10 tons per acre. This manure was ploughed under as soon as the condition of the soil would permit its being worked without injuring its texture.

The double cutaway disc harrow was used twice to break up the soil, followed with the smoothing harrow.

Before planting, the roller was used to break the clods and make an even surface besides compacting the soil. The drills were made with an ordinary Lister plough 30 inches apart.

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Preparation of seed.—All seed used was previously treated in a solution of mercuric chloride, the solution being the strength of 1/1,000 (one part mercuric chloride in 1,000 parts of water.) As soon as the tubers were dry they were cut so that each tuber made four sets.

Planting.—The sets were planted in the drills 18 inches apart, and covered with the Lister plough. The planting was done on May 25 and 26. When the young plants began to peep through the ground, the light adjustable lever harrow was run over the field once to destroy the weeds and level down the land. This one horse cultivator was passed through four times, and hoeing done twice. Considerable trouble was experienced in controlling the Colorado potato beetles. However, they were finally brought under control without having done very serious damage to the foliage.

From the first to the last spray poisoned Bordeaux mixture was used, the usual 4-4-40 solution, with the addition of one pound of Paris green to every 40 gallons of solution.

The potatoes were dug between October 4 and 6. The total yield per acre of salable tubers was 254·80 bushels and 14 bushels of small unsaleable potatoes.

Both varieties did well considering that the land was in a very run down condition, and only a moderate coat of manure applied.

The following is the cost of growing the acre of potatoes and the net profit or returns:—

Rent of land at $3 per acre per year	$ 3 00
Cost of labour—	
(*a*) Two horses at 8 cents per hour per horse	11 68
(*b*) For manual labour at 17½ cents per hour	32 20
Cost of manure at $1 per ton	10 00
Cost of seed	16 41
Cost of spraying materials	4 72
Total cost	$ 78 01
RECEIPTS.	
Total value of saleable potatoes on acre at 60 cents per bushel	$ 152 88
Value of unsaleable potatoes at 15 cents per bushel	2 17
Total	$ 155 05
STATEMENT OF PROFIT AND LOSS.	
Total value of crop as above	$ 155 05
Total cost of production	78 01
Total net profit	$ 77 04
Net cost of producing one bushel of 60 pounds . . Cents.	0 29

SEED PRODUCTION.

So that the necessary interest in the production of home-grown garden seed might be encouraged, an attempt was made to obtain some seed. Several blocks of tomatoes were planted in the garden for the purpose of securing a quantity of good smooth fruit from which to extract the seed. In October the fruit was harvested and seeds rubbed out on wire screens, washed and dried. This seed was used later on in the seed distribution work. Garden peas, Early Malcolm sweet corn and flower seeds of diverse kinds were collected, and of the latter it is a pleasure to report that a very high germination test was recorded. In fact all the seeds saved gave very high test, and it is a matter of vital importance to the farmers to try this work the coming season or make preparations for a year in advance.

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ORNAMENTAL GARDENING.

SWEET PEAS.

Sixty-one varieties of sweet peas were sown in the open May 10. The first bloom was recorded July 12 and from that date until the end of the season there was a splendid profusion and variety of bloom.

Although the results obtained were fairly satisfactory yet it is hoped that the coming year this work will be a greater success.

PERENNIALS.

The following is a list of the perennials that wintered well in the nursery rows, and produced an abundance of bloom throughout the season. Seed was saved from many of them which gave a high germination test.

Achillaea Ptarmica.
Bellis perennis.
Delphinium Hybrids.
" *chinense.*
Dianthus barbatus.
" *plumarius.*
Gypsophila paniculata.
Gaillardia.
Hesperis.
Linum perenne.
Lychnis chalcedonica.
" *Haageana.*
Lupinus.
Myosotis alpestris.
Pansy, (collections).
Physostegia virginica.
Pyrethrum hybridum.
Pentstemon barbatus.
Poppy, Iceland, new hybrids.
" " mixed.
" Orientale. Trilby, Psyche, and Mammoth.
Rudbeckia fulgida.
" *purpurea.*
Veronica spicata.

In addition to the foregoing list of perennials a new nursery was started. The seed was sown during July and the plants pricked out into the nursery rows during the first week in September. The plants became well established before the winter set in and it is hoped that a larger number of varieties will winter successfully.

BULBS.

Considerable attention was attracted by the show of bloom presented by the tulips. However, only a few varieties proved suitable for conditions here. This may not hold for every year, but may have been due to the exposed location of the beds.

The following varieties proved very satisfactory: Pottebakker White, Joost van Vondel, La Reine, Late Single Picotee, Cottage Maid, and Chrysolora.

The Darwin tulips, daffodils, and hyacinths, owing to winter injury, did not amount to anything.

TREES AND SHRUBS.

The nursery stock planted out the spring of 1914 consisting of deciduous trees, conifers and shrubs did very well. However, there were a few varieties that did not do very well, they had either been injured by drying out previous to planting or were too tender to stand the severe winter.

Some of the varieties that killed back during the winter sent up new growth again, but whether this wood will stand the winter is yet to be determined.

HEDGES.

So that a good idea could be got of the value of certain shrubs for hedge purposes, fifteen hedges were planted out in the spring of 1915. These hedges are to be kept clipped to demonstrate their value for ornament and for more practical purposes.

They are as follows: *Rhamnus Frangula, Rhamnus cathartica, Picea alba* (native spruce), *Salix pentandra* (laurifolia), *Caragana arborescens, Larix europaea, Abies balsamea, Syringa Josikaea, Hydrangea paniculata grandiflora, Cornus alba, Thuya occidentalis, Ligustrum amurense, Caragana frutescens, Berberis Thunbergii, Thuya occidentalis Wareana.*

PHLOX.

Twenty-two varieties of hardy phlox were planted the first of October in nursery rows.

ANNUALS.

The following annuals were started in the hotbed between April 16 and 29. They were pricked out as soon as ready, and planted to the open May 12:—

Variety.	Number of Varieties.	Began to Bloom.	Bloom Over.
			Sept. 22
Aster	28	Aug. 13	Frost.
Antirrhinum	6	" 20	"
Arctotis grandis	1	July 12	"
Alonsoa	1	Aug. 16	"
Alyssum, (Little Dorrit)	1	" 1	"
Acroclinium, Double Rose	1	July 15	"
Abronia umbellata	1	" 30	"
Amaranthus	1	Aug. 10	"
Browallia elata	1	July 24	"
Balsam, Camellia Flowered	1	June 25	"
Candytuft	2	July 21	"
Carnation, Marguerite	1	Aug. 3	"
Coreopsis	1	June 25	"
Cockscomb	1	" 12	"
Celosia plumosa	1	July 17	"
Calendula	1	Aug. 1	"
Dahlia, Collarette	....	......	"
Dianthus Heddewigii	1	July 25	"
Dimorphotheca aurantiaca	1	" 9	"
Daisy, double	1	......	"
Gaillardia, double	1	" 19	"
Helichrysum	1	" 29	"
Ipomaea rubro coerulea	1	" 8	"
Jacobaea, double	1	......	"
Lobelia	2	......	"
Marigold, single and double French	1	June 28	"
Mimulus	1	Aug. 2	"
Nicotiana affinis	1	July 4	"
Nemesia	6	June 26	"
Penstemon	1	Aug. 21	"
Petunia	3	June 21	"
Phlox Drummondii	7	July 4	"
Pansy	5	June 23	"
Ricinus communis major	1	July 30	"
Salvia	2	Aug. 16	"
Salpiglossis	1	July 15	"
Scabious	1	Aug. 11	"
Schizanthus grandiflora Hybrids	1	" 3	"
Stocks, Ten Weeks	7	July 9	"
Tagetes	1	June 20	"
Verbena	3	" 2	"
Zinnia	2	" 19	"

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The annuals sown in the open ground did not amount to much as a result of insect injury. The following few varieties were not attacked and did very well:—

Variety.	Number of Varieties.	Date of Sowing.	Began to Bloom.	Bloom Over.
				Sept. 22
Calendula officinalis	2	May 21	July 29	Frost.
Candytuft	2	" 21	" 15	"
Cornflowers, mixed	1	" 21	" 16	"
Larkspur	3	" 21	" 12	"
Lavatera, pink	1	" 21	Aug. 11	"
Mignonette	1	" 21	July 27	"
Nasturtium	2	" 21	" 30	"
Portulaca	1	" 21	Aug. 2	"
Sweet Sultan	1	" 21	July 21	"

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EXPERIMENTAL FARM, BRANDON, MAN.

REPORT OF THE SUPERINTENDENT, W. C. McKILLICAN, B.S.A.

In presenting the following report on the horticultural work at the Brandon Experimental Farm for the year 1915-16, credit must be given to the Assistant in Horticulture, Mr. S. A. Bjarnason, B.A., B.S.A., who did much of the work of taking notes and who has compiled the results presented herewith.

The season opened early, and April was a fine warm month favourable for early work. This was followed by cold weather and repeated severe frosts during May and June and cool weather even in July. During this same period and in August, the rainfall was much below normal. The season was, therefore, a very trying one for horticultural products, much damage being done by frosts, and crops that were not actually damaged were delayed and reduced in productiveness. Unusually early fall frosts, beginning with a sharp frost on August 23, completed a series of untoward conditions that made the season as a whole the most unfavourable in years.

VEGETABLES.

Onions, parsnips, lettuce, peas, carrots, parsley, spinach, radish and early potatoes were sown during the latter part of April and the early part of May. The succeeding dry weather and frequent frosts kept these in check to a great extent so the advantage of early sowing was greatly minimized. Everything was progressing favourably until the night-frosts late in August destroyed all tender stuff and froze the vines of the potatoes and tomatoes. Corn, beans and cucurbitaceous plants were totally destroyed. Hardy garden stuff did not suffer, and ripened very satisfactorily.

POTATOES.

Twenty varieties of potatoes were tested this year. Two 66-foot rows of each variety were grown, and the yield per acre was computed from the yield obtained from these. In order to give a better idea of the average yield of each variety, 5-year, 4-year, 3-year, and 2-year averages are also given below. The yield in 1915 was as follows:—

POTATOES—Test of Varieties.

Variety.	Shape.	Size.	Colour.	Average Earliness.	Yield per Acre, 1915.				Total.	
					Marketable.		Not Marketable.			
					Bush.	lb.	Bush.	lb.	Bush.	lb.
Hamilton Early	Round	Large	White	Early	421	36	24	..	445	36
Gold Coin	Oblong to oval	Large	White	Late	430	48	12	48	443	36
Early Norther	Long	Large	Red	Early	412	30	25	36	438	06
Early Bovee	Long-flat	Large	Red-pink	Early	368	30	38	30	407	..
Woodbury White Rose	Long	Large	White	Medium	379	30	22	..	401	30
Early Ohio	Long	Medium	Red	Early	357	30	27	30	385	..
Houlton Rose	Long-flat	Large	Red	Early	359	18	25	42	385	..
Manitoba Wonder	Long	Medium	Red	Medium	353	48	25	36	379	24
Reeves Rose	Long	Medium	Pink	Medium	359	18	14	36	373	54
American Wonder	Long	Medium	White	Medium	350	06	20	06	370	12
Table Talk	Long-flat	Large	White	Late	311	36	25	36	337	12
Early White Prize	Long	Medium	White	Early	319	..	17	30	336	30
Wee McGregor	Long-flat	Medium	White	Late to Medium	298	48	29	18	328	06
Peacock Surprise	Long	Medium	Russet	Medium	286	.	38	30	324	30
Rawlings Kidney	Long	Medium	White	Late	251	06	36	36	287	42
Early Snowdrop	Long-flat	Medium	White	Early	254	48	16	30	271	18
Irish Cobbler (C.E.F. Seed)	Round	Medium	White	Medium Early	144	48	12	48	157	36
Ashleaf Kidney	Long	Small	White	Medium	73	18	5	30	78	48
Vick Extra Early	Long	Small	White		49	30	16	30	66	..
Late Puritan	Long	Small	White		..	..	25	36	25	36

VARIETY TESTS—Potatoes.

Variety.	Yield per Acre. 5-Year Average.	
	Bush.	lb.
Table Talk	532	23
Woodbury White Rose	507	23
Rawlings Kidney	477	05
Early Ohio	449	58
American Wonder	448	35
Reeves Rose	448	32
Manitoba Wonder	433	02
Hamilton Early	429	56
Early Bovee	429	55
Peacock Surprise	413	58
Early White Prize	405	22
Irish Cobbler	395	04
Gold Coin	378	49
Late Puritan	365	14

Variety.	Yield per Acre. 4-Year Average.	
	Bush.	lb.
Wee McGregor	441	39

Variety.	Yield per Acre. 3-Year Average.	
	Bush.	lb.
Early Norther	411	52
Houlton Rose	376	50

Variety.	Yield per Acre. 2-Year Average.	
	Bush.	lb.
Early Snowdrop	245	39
Ashleaf Kidney (English Type)	137	46

CULTURAL AND OTHER EXPERIMENTS WITH POTATOES.

(a) *Storing Test.*—In order to determine the keeping qualities of the different sorts, twenty-two varieties were stored during the winter of 1914-15. The temperature in the cellar was rather high, averaging perhaps 40° to 45° F. at least. This, combined with the dry atmosphere, made the test quite a severe one. In the table

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below, Group I includes those that remained firm and had few or no sprouts. Group II includes those that were firm or medium firm with medium or long sprouts, while Group III is made up of those that were soft and had long sprouts. The test was concluded on May 5, 1915.

Group I.	Group II.	Group III.
Peacock Surprise	Irish Cobbler	Early Ohio.
Early Norther	Gold Coin	Vick Extra Early.
American Wonder	Ashleaf Kidney	Reeves Rose.
Rawlings Kidney	Lightning	Empire State.
Late Puritan	Wee McGregor	Manitoba Wonder.
Houlton Rose	Early Bovee	
	Table Talk	
	Early Snowdrop	
	Hamilton Early	
	Early White Prize	
	Woodbury White Rose	

(b) *Hilled vs. Level Cultivation.*—On heavy clay loam such as is found in the vegetable gardens, the hilled cultivation has given somewhat better results this year.

(c) *Planting on Different Dates.*—Potatoes were planted on the following dates: May 1, May 14, May 28, and June 4. The variety used was Early Bovee. The result shows that the plot planted on the second date gave the best returns, while the one planted on May 1 came next. Those planted on June 4 were much poorer, and had not reached the stage of maturity when cut back by frost, late in August.

(d) *Three Cultivations versus Six cultivations.*—In a climate where the rainfall is limited, keeping the soil in good tilth helps materially in conserving moisture. In order to show the beneficial results of repeated cultivation, two adjacent plots one-twentieth acre each, were planted to the same variety (Peacock Surprise). The only difference in treatment was in the number of cultivations:—

—	Planted.	Dates of Cultivation.	When Dug.	Yield per Acre. (Bush.)		
				Marketable.	Unmarketable.	Total.
For 3 cultivations	May 27	June 30, July 20, Aug. 9	Sept. 10	139·6	19·00	158·6
For 6 cultivations	" 27	June 30, July 10, 20, 30; Aug. 9 and 19	" 10	164·66	23·33	188·0

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(e) Test of the earliness of varieties:—

Variety.	When Planted.	Appeared Above Ground.	Ready for Use.
Early Norther	May 1	May 29	July 8
Hamilton Early	" 1	" 29	" 10
Early White Prize	" 1	" 29	" 10
Early Bovee	" 1	" 29	" 12
Irish Cobbler	" 1	June 2	" 14
Houlton Rose	" 1	May 29	" 15
Early Ohio	" 1	" 29	" 20
Wee McGregor	" 1	" 31	" 30
Peacock Surprise	" 1	" 31	Aug. 10

(f) The experiments on "Different Methods of Cutting" did not give any positive results this year—and the same is true of those "Planted Different Distances Apart."

(g) A system of selection in order to secure "Elite Stock" seed, was carried out again this year. The potatoes selected from the best individual hills last year, were planted whole in continuous rows—each group being separated from the next by an intervening space in the row. Four varieties were used, viz.: *Table Talk, Wee McGregor, Early White Prize,* and *Early Ohio.* The best groups of hills are being kept for 1916 seed.

(h) *Cost of Production of One-half Acre of Crop.*—A quarter acre each of an early and late variety were planted side by side in the spring and a record kept of all the work done throughout the season. The result is given below.

Potatoes—Cost of Production.

	Bushels Marketable.	Bushels non-marketable.	Total Bushels.	Value of Seed = $1.00 per bushel.	Cost of Cutting and Planting.	Cost of Harrowing and Cultivating.	Cost of Spraying.	Cost of Harvesting.	Total Cost.	Value of Marketable Tubers = 50c per bush.	Value of non-Marketable Tubers at $3.00 per ton.	Total Value.	Net Profit per acre.
				$	$	$	$	$	$	$	$	$	$
¼ Acre Table Talk	40.15	5·816	45·966	......	......	......	......	......	......	......	......	......	....
¼ Acre Early Bovee	49·78	7·016	56·796	......	......	......	......	......	......	......	......	......	......
Total for ¼ Acre	89·93	12·832	102·762	10.30	6 80	1 06	3 30	19 45	40 91	.....	......	.....	...
Total for one Acre	179·86	25·66	205·52	20 60	13 60	2 12	6 60	38 90	81 82	89 93	2 31	92 24	10 42

Value of manual labour, 19½ cents per hour.
Value of horse labour, 7 cents per hour per horse.
Value of poison spray (Paris green), 40 cents per pound.

Distribution of Seed Potatoes.

Some 519 samples of seed potatoes were sent to Manitoba farmers who applied for them.

Cooking Test.

A cooking test of potatoes was again carried out. This year they were baked instead of boiled. The following are the results:—

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POTATOES.—Cooking Test.

Variety.	Smoothness, etc.	Flavour.	Texture.	Dryness.	Remarks.
Early Snowdrop	Smooth, shallow eyes	Good	Fine	Fairly dry	Yellowish flesh.
Rawlings Kidney	Smooth, shallow eyes	Good	Fine	Dry	White flesh.
Reeves Rose	Fairly smooth, fairly shallow eyes	Good	Fairly fine	Fairly dry	Yellow flesh.
Early Bovee	Smooth, shallow eyes	Good	Fine	Very dry	White flesh.
Early White Prize	Smooth, shallow eyes	Good	Fine	Dry	White flesh.
Irish Cobbler	Smooth, fairly shallow eyes	Good	Fine	Fairly dry	White flesh.
Wee McGregor	Smooth, fairly shallow eyes	Good	Fine	Rather moist	
Early Ohio	Fairly smooth, fairly shallow eyes	Good	Fine	Rather moist	Dark flesh.
Manitoba Wonder	Fairly smooth, fairly shallow eyes	Good	Fairly fine	Dry	
Woodbury White Rose	Fairly shallow eyes	Good	Fairly fine	Fairly dry	White flesh, cooks quickly
Early Norther	Fairly smooth, deep eyes	Good	Fine	Dry	White flesh.
Houlton Rose	Somewhat rough, deep eyes	Good	Fine	Dry	White flesh.
Hamilton Early	Smooth, shallow eyes	Good	Fine	Dry	White flesh.
Vick Extra Early	Smooth, shallow eyes	Medium	Fine	Very moist	Yellow flesh.
Table Talk	Smooth, very shallow eyes	Medium	Coarse	Moist	
Gold Coin	Smooth, rather deep eyes	Medium	Medium	Moist	
Peacock Surprise	Smooth very shallow eyes	Medium	Fine	Very moist	

ASPARAGUS.

The asparagus bed again yielded a good crop of this early vegetable. The bed is given very little care during the summer, but the tops are removed from the plants, and a mulch of manure applied in the fall. On account of its earliness and ease of handling, asparagus should have a place in every farmer's garden. It was ready for use on April 30. The season lasted until May 30.

BEANS.

Eight varieties of beans were grown, but owing to early frosts, no results were obtained. The cultural experiment was also spoiled.

BEETS.

There were some good yields in beets this year. The seed was sown on May 18, and the crop harvested on September 10.

BEETS

Variety.	Date of Germination.	Yield per Acre.		Shape and size.	Cooking Test.		
					Flavour.	Texture.	Colour.
		Bush.	lb.				
Ruby Dulcet	May 31	1097	..	Oval, rough, large	Good	Rather coarse	Pale with light rings.
Crosby Egyptian	" 31	1080	54	Flat, uniform	Good	Fairly good	Deep colour.
Eclipse	June 14	984	06	Globular, rough looking	Good	Rather coarse	Pale and uneven.
Extra Early Blood	" 14	968	..	Flat to globular	Good	Tender, coarse	Light coloured rings.
Early Black Red Ball	" 14	903	30	Flat to globular	Good	Free from fibre, fine and tender	Dark, even colour.
Cardinal Globe	" 12	847	..	Irregular and not uniform	Good	Coarse and fibrous	Colour very uneven.
Selected Early Blood Turnip	" 14	838	54	Globular, smooth	Good	Fine and tender	Dark colour.
New Meteor	" 14	548	30	Globular, smooth, rather small	Good	Fine, free from fibre	Good colour.

Cultural Test.—An experiment was carried out to determine the best distance apart for beets. Three 66-foot rows, 18 inches apart, were thinned to 2 inches, 3 inches and 4 inches apart in the row, respectively. The result showed that the smallest distance gave the most uniform roots for table use.

Variety.	Pounds from 66 ft row.	Bushels per acre.	Remarks.
Thinned 2 inches apart........	137·0	1004·6	Few large. Mostly small, medium to small.
" 3 " "	140·5	1030·3	A few large. Mostly medium, not uniform.
" 4 " "	143·0	1048·6	About 50% were large, the rest medium.

The most uniform root for table use is obtained by thinning to 2 inches apart in the row. The larger distance gives more large, less desirable roots, and altogether more waste, even if the yield per acre is somewhat higher.

BRUSSELS SPROUTS.

One variety, the Dwarf Improved, was grown. The seed was sown on April 3, and planted out on May 25. The growth was strong enough but there was no "heart,"—the buds being too open.

CABBAGE.

This season was a good one for cabbages. The crop was good and entirely uninjured, except for an attack of the cabbage butterfly, which was quickly controlled by pyrethrum powder. The following table gives the results obtained:—

CABBAGE.—Test of Varieties

Variety.	Date Sown.	Date planted out.	Ready for use.	Weight of 10 average Heads. (Trimmed for market).	Cooking Test.	
					Flavour.	Texture.
				lb.		
Paris Market Early..	April. 5	May 25	July 19	40	Good...........	Very tender.
Early Jersey Wakefield..............	" 5	" 25	" 22	36	Very good......	Very tender.
Copenhagen Market..	" 5	" 25	" 30	81	"	Very tender (heads very firm.)
Nofalt................	" 5	" 25	" 6	100	Rather strong...	Tender.
Glory of Enkhuisen.	" 5	" 25	Aug. 6	91	....	....
Northern Favorite...	" 5	" 25	" 10	54·5	Good medium..	Tender.
Kildonan............	" 5	" 25	" 14	69	Fine, mild......	Very tender (good firm heads).
Flat Swedish.........	" 5	" 25	" 29	64·5	Rather strong...	Medium tender.
Fottler Improved Brunswick.........	" 5	" 25	Sept. 1	61	Medium strong.	Tender (open loose heads).
Danish Summer Ballhead...............	" 5	" 25	" 10	48	Good medium..	Tender.

CAULIFLOWER.

The cauliflower made excellent growth. Two varieties were sown on April 5 and planted out on May 25.

The varieties tested were: Early Snowball, and Extra Selected Dwarf Erfurt. The former was ready for use on July 29 and yielded 25 good heads (100 per cent). The latter was slightly earlier but smaller, and yielded 23 good heads out of a total of 25 (92 per cent). Both are tender and of a good flavour, although the Erfurt is a little strong.

CARROTS.

Five varieties of carrots were sown in the open, on June 4. All gave good results, the best being Half Long Chantenay and Improved Danvers Half Long. The cooking test showed all varieties to be of a good flavour, and very tender.

Cultural Test.—A thinning experiment was also carried on with the carrots. Rows were 18 inches apart, and the plants were thinned to distances of 1½, 2 and 3 inches apart.

Distance Apart.	Lb. from 66′ row	Bush. per acre.	Remarks.
1½″ apart in row........	113·5	832	Medium size, fairly uniform.
2″ apart in row.........	126	924	Large to medium, uniform.
3″ "	119	872·6	Large and large-medium. Very few small.

The most uniform medium-sized roots were obtained from those thinned to 1½ inches and 2 inches apart, with the balance considerably in favour of the latter.

CELERY.

Celery again proved to be a failure. Seven varieties were tried, but none of these reached a stage where bleaching could be started. Except in very favourable seasons, celery will not make good growth without artificial watering, a practice which is not being carried out on this Farm. White Plume and Noll Magnificent seem to be the strongest growers.

Cucumbers, citrons, musk melons and watermelons were tried, but all froze on August 24. The exceptionally early frost destroyed what would have been a very good crop of all these vegetables.

CORN.

Eleven varieties of corn were planted on May 27, and produced good growth. The total destruction of the crop on August 24 made any experimental results impossible. This year is therefore an exception, as corn has proven to be a very desirable crop in previous years.

LEEKS.

French Carentan, and English Flag were the two varieties tested. The former gave a considerably better yield. Neither did very well, and many of the plants died after being transplanted, on account of the dry weather.

BRANDON.

LETTUCE.

The lettuce did well this year. Ten varieties were tested for yield, earliness, length of season and quality. The results are as follows:—

Variety.	Ready for Use.	End of Season.	Weight of 10 average Heads.		Table Quality.	
					Flavour.	Texture.
			Lb.	oz.		
Dreer All Heart	July 5	August 6	6	8	Flat	Very fine, crimped.
May King	“ 5	“ 9	4	12	Good	Fine, crimped.
All Year Round	“ 6	“ 2	5	..	Good	Fine.
Giant Crystal Head	“ 10	“ 8	14	..	Good	Crisp and fine.
Iceberg	“ 10	“ 8	12	..	Good	Very crisp and tender.
Cos Trianon	“ 12	“ 10	20	..	Good	Very crisp and tender.
Grand Rapids	“ 12	“ 10	7	8	Fair, rather strong	Fine, but not crisp.
Improved Hanson	“ 13	“ 1	11	8	Good	Crisp, fine.
Denver Market	“ 13	“ 6	9	..	Good	Crisp, fine.
Favorite	“ 15	“ 8	7	8	Good	Crisp, fine.

ONIONS.

The crop of onions was good. Besides the test of varieties, several cultural tests were carried out, the results of which are tabulated below. In the variety tests, the “Globe” varieties were the best yielders.

VARIETY TEST.—Onions.

Name of variety.	Date of Sowing.	Date of Pulling.	Size.	Shape.	Colour.	Yield from 30 foot Row.	
						Lb.	oz.
Yellow Globe	April 21	Sept. 7	Large	Globular	Yellow	25	8
Red Globe	“ 21	“ 7	Large	Globular	Red	24	..
White Globe	“ 21	“ 7	Large	Globular	White	23	8
White Queen	“ 21	“ 7	Large	Flat	White	22	8
Danvers Yellow Globe	“ 21	“ 7	Medium	Globular	Yellow	21	8
Extra Early Red	“ 21	“ 7	Large	Flat	Red	20	8
Red Wethersfield	“ 21	“ 7	Large	Flat	Red	19	..
Very White Pearl	“ 21	“ 7	Large	Flat (thick)	White	18	..
Early White Barletta	“ 21	“ 7	Medium	Flat	White	15	..
Ailsa Craig	“ 21	“ 7	Medium to small	Globular	Light yellow	11	8

(a) *Cultural Tests.*—To test relative merit of starting onions in hotbeds as compared with sowing in open. The seed sown in hotbeds was sown on March 29 and the plants were set out May 25. The outside seeding was done on April 21. The results with three different varieties were as follows:—

Variety.	Yield from 30 foot Row. Sown in hot-bed and transplanted.		Yield from 30-foot Row sown outside.	
	lb.	oz.	lb.	oz.
Danvers Yellow Globe	12	..	21	8
Extra Early Red	19	8	20	8
Large Red Wethersfield	7	4	19	..

In addition to yielding better, the outside sowing required much less work.

BRANDON.

(b) *Thinning experiment.*—The same three varieties were used for this experiment. The rows were 18 inches apart. Sowing was done on April 21.

Variety.	Yield from 30-foot Row.		
	lb.	oz.	
Danvers Yellow Globe			
Thinned to 1″ apart	22	12	No very great difference in size, but those thinned 3 inches apart were more uniform in size.
" 2″ "	16	12	
" 3″ "	13	..	
Extra Early Red.			
Thinned to 1″ apart	21	12	
" 2″ "	12	12	
" 3″ "	9	..	No very great difference in size, but those thinned 3 inches apart were more uniform in size.
Large Red Wethersfield.			
Thinned to 1″ apart	18	8	Many small, a few large and medium
" 2″ "	13	..	
" 3″ "	16	4	Uniformly large to medium.

(c) *Small versus Large Sets.*—A 30-foot row of small sets yielded 25 pounds while the large sets yielded 31 pounds.

(d) *Growing Onion Sets.*—Seed was sown at the rate of 200 seeds per lineal foot. The resulting crop was harvested on September 7. The bulbs were small and well suited for sets.

(e) A few rows (22 feet each) of Multiplier onions were planted on November 6, just before snow fell. An equal number will be planted beside these in the spring of 1916. The object is to find the relative merits of fall and spring planting.

PARSLEY.

One 66-foot row of Double Curled parsley was grown, and gave an average yield.

PARSNIPS.

The yield of parsnips was light. Of the three varieties tested, the New Intermediate, while the lightest yielder, gave the highest percentage of marketable roots. Hollow Crown gave the highest yield. Both were of good flavour and free from fibre.

Cultural Test.—Three rows of Hollow Crown were sown 30 inches apart and the roots thinned out to 2, 3 and 4 inches apart. The result is as follows:—

	Yield. Bush. per acre.	Yield of Marketable Roots. Bush. per acre.	
Hollow Crown.			
Thinned 2″ apart	250·8	154	Small to small medium. Not uniform.
" 3″ "	246·4	160	Medium, fairly uniform.
" 4″ "	246·4	165	Medium; few large; fairly uniform.

PEAS.

The peas have proven very satisfactory. They were not injured by the spring frosts and had matured well before the date of the frost which proved disastrous to the beans and other tender garden stuff, late in August.

Twenty-one varieties were tested, with the following results:—

PEAS—Test of Varieties.

Variety.	Date Sown.	Date Ready for Use.	Length of Pod.	No. of Peas in Pod.	Height of Vine		Yield 15-ft. row. (Ripe but not threshed.)	Cooking Test.
			Feet.		Ft.	In.	Lb.	
Early Pilot	May 3	July 10	3	6		9	2½	Good flavor, tender.
Gregory Surprise	" 3	" 14	2¾	6	3	6	3½	
Thomas Laxton	" 3	" 24	3½	7	4	5	3½	Excellent flavor, very tender.
Early Giant	" 3	" 24	4½	7	4	2	3½	Medium flavor, fairly tender.
Sutton Excelsior	" 3	" 26	3½	7	2	6	4¼	Very good flavor, very tender.
Western Beauty	" 3	" 26	3¼	7	2	3	4	Medium flavor, tender; pods well filled.
Premium Gem	" 3	" 28	3	9	2	..	4¼	Very good flavor, tender.
American Wonder	" 3	" 28	3⅜	7	2	2	3½	Very good flavor, tender.
Gradus	" 3	" 29	4	7	4	7	2¾	Very good flavor, very tender; pods large, and irregularly filled.
English Wonder	" 3	" 29	3	8	2	4	3½	Good flavor, rather dry. (Small, well-filled pods.)
Rivenhall Wonder	" 3	" 30	3½	7	2	2	3½	Fairly good flavor. Fairly tender. Dry.
Dainty Duchess	" 3	" 31	4⅛	9	6	2	5	Good flavor; rather dry.
Reliance	" 3	Aug. 2	4½	9	2	10	4½	Very good; very tender; large; well-filled pods.
Telephone	" 3	" 3	4¼	7	4	9	4½	Very good flavor, tender. Large peas.
Lincoln	" 3	" 3	3¾	8	2	10	4½	Very good flavor; very tender.
Quite Content	" 3	" 3	4⅝	9	5	4	4	Medium flavor; dry. Large peas.
Advancer	" 3	" 3	3¼	6	4	..	4½	Excellent flavor; very tender; peas small.
Juno	" 3	" 3	3½	8	2	8	5	Fairly good. Rather too ripe.
Rent Payer	" 3	" 3	4	8	2	10	4¼	Fairly good. Fairly tender but dry.
Heroine	" 3	" 4	4⅜	8	3	4	5	Good flavor; tender but rather dry.
Stratagem	" 3	" 5	4⅞	8	3	9	3¼	Good flavor, fairly tender but dry.

Cultural Tests.—With a view to finding out whether sowing one variety on successive dates, is as good as sowing varieties which are ready for use on successive dates if sown at the same time, the varieties Gradus, Advancer, Stratagem and Thos. Laxton were sown on May 4. Later, on May 11, 18 and 25, respectively, an additional row of Thos. Laxton was sown.

PEAS—Cultural Test.

	Date sown.	Yield of Green Peas, 25 ft Row.						Yield of ripe peas from 25-ft. Row (Threshed)		Total. Yield 50-ft.	
		First Picking.			Second Picking.						
		Date.	lb.	oz.	Date.	lb.	oz.	Lb.	oz.	lb.	oz.
Gradus..............	May 4..	July 28..	5	..	Aug. 3..	2	4	2	6	9	10
Advancer............	" 4	" 30..	4	..	" 3..	3	8	4	4	11	12
Stratagem..........	" 4..	Aug. 10..	5	..	....	0	0	4	12	9	12
Thos. Laxton........	" 4.	July 26..	4	4	Aug. 3..	1	9	3	..	8	13
"	" 11.	Aug. 3..	4	..	" 8..	0	12	2	12	7	8
"	" 18..	" 6..	3	7	....	0	0	2	..	5	7
"	" 25.	" 8..	1	5	....	0	0	1	6	2	11

The above table shows that both in length of season and in yield of peas, the sowing of four varieties varying in season from very early to late, gave better results than successive sowings of one early variety.

Home-grown Seed.—Home-grown seed of two varieties of peas was sown in a comparative test with purchased seed. In both cases earlier development of the former was the result. With American Wonder, home-grown seed produced peas ready for use on July 23 as compared with July 28 for the purchased seed. With Reliance, July 30 and August 2 were the dates on which the peas were ready, the earlier dates being those from the home-grown seed. Yield and quality appeared to be equal from both sources of seed.

PUMPKINS, MARROWS, SQUASHES.

Pumpkins, marrows, and squashes were sown on June 9, and made very favourable progress until August 24 when the whole crop was damaged by frost. Succeeding frosts killed the vines entirely. There are therefore, no experimental data on these vegetables for this season.

RADISH.

One variety of radish was sown on April 27. The leaves were touched by late spring frosts, but the yield was a good average. No attempt was made at successive sowings.

RHUBARB.

A new bed of rhubarb was started in 1914. The earliness was noted and tests made of the quality, with the following results:—

Variety.	Ready for Use.	Cooking Qualities.	
		Flavour.	Texture.
Linnaeus	April 30	Good	Tender.
Prima Donna	May 4	Medium	Coarse.
Victoria	" 7	Very good	Tender, rich colour.
Cyclops	" 12	Fairly good	Rather coarse.
Paragon	" 17	Rather poor	Coarse.
Early Raspberry	" 25	Good	Fairly tender.
Hobday Giant	" 25	Fair	Tender.
Monarque	" 25		
Daw Champion	June 20	Fairly good	Rather coarse.

SALSIFY.

Two 66-foot rows of salsify were grown, but the crop was not very good. The roots were very prongy and small.

SPINACH.

A good medium yield of Bloomsdale was realized. It was fit for use from June 20 to July 7.

TOMATOES.

The tests with tomatoes were very unsatisfactory, as the frost caught them just when the medium-early varieties were beginning to ripen. The earliest ripe was the Alacrity 14B, which had ripe fruit on August 16. Alacrity 12B was first ripe on August 21. The season was much later than 1914, when the majority of the varieties ripened fruit on July 25 to July 30. The heaviest yields of green fruit were from Extra Early Wealthy, Earliest of All, XXX Early, and Chalk Early Jewel.

Cultural Test.—A test was undertaken in regard to methods of pruning tomatoes, but owing to the late development of the fruit on account of the cold season, and its injury by late frosts, no results of value were obtained.

Ripening test of Tomatoes.—Twenty sound specimens of each of two varieties were ripened under different conditions. Group I was placed in direct sunlight in a window facing south. Group II was placed on a floor in a dim corner of the room where no direct daylight could reach the fruit. Group III was placed in air-tight paper bags in a dark cupboard in the same room. Group IV was placed in a box on the basement floor, where no light reached the fruit and where the atmosphere was somewhat damper than in the room containing the other groups.

Each group was subdivided into (*a*) slightly blushed specimens, and (*b*) totally green specimens, but the relative merits of the different methods used showed equally well on both (*a*) and (*b*). Each group is therefore reported without any subdivision :—

Groups.	Temperatures. Fahrenheit.	Results observed.
Group I. Placed in direct sunlight in a window	Minimum 50°.... Maximum 66°... Average 55·6°...	This was the quickest ripening group (both "blushed" and "green" specimens) 40% of fruit was soft.
Group II. in dim corner in room............	Minimum 50°.... Maximum 66°... Average 56°......	Took longer to ripen, but showed only 17% of soft fruit.
Group III. in air-tight light proof bags.......	Minimum 49·5°. Maximum 69°... Average 56·3°...	This method is good, especially for *perfectly sound, green fruit,* as it takes long to ripen and can be kept a long time. Of the "blushed" specimens used, only 50% came through in good condition. The fruit ripens slower (by a few days) than that in Groups I and II.
Group IV. in box in dark, on basement floor.	Minimum 50°.... Maximum 64°.... Average 56°.....	Practically 100% of the fruit came through the test in good condition. Period of ripening about the same as for Group III.

TURNIPS.

Seven varieties of turnips were tested. These were all swedes (Ruta Baga) and made good growth for table use. The growth was not rank, but quite healthy. About the smoothest and most uniform were Hall Westerbury, Favorite and Bangholm Purple Top, while the heaviest yielders were Skirving Purple Top and Sutton Champion.

FRUITS.

APPLES.

A good crop of cross-bred and seedling crab apples was harvested and was sold for preserving and jelly making. The most productive and hardiest trees are Dr. Saunders' cross-breds and seedlings of the same. The best tree of this type, a seedling from Cluster, has been given the name of Bedford, in honour of the first superintendent of this Farm, Mr. S. A. Bedford. This tree is perfectly hardy, has produced abundantly every season for the last four years, and bears a crab apple of reasonably good size, fine appearance and first rate quality. This apple should be of value and it is proposed to propagate from it. Others of Saunders' hybrids and seedlings that are doing well are: Gertrude, Seedling of Tony, Columbia, Alberta, Sparta, Elsa, Tony, Osman, Norman, Silvia, Pioneer, Seedling of Elsa, and Seedling of Silvia. Sweet Russet Crab, and Ostrakoff bore a fair amount of fruit, larger in size than most of Saunders' hybrids, but the trees bear evidence of considerable injury from sunscald and other causes. The Hyslop bore fruit of large size for crab apples, but was late. No fruit of other standard varieties was produced this year, though many trees wintered well.

The orchard has been entirely free from insect attacks, and frost did not do any harm, at any time during the growing season. Fireblight attacked a good many trees, but the diseased parts were cut out and carefully burned so that the disease did not spread. Clean cultivation was practised, all weeds kept down and a dust mulch maintained throughout the season. Cultivation was discontinued after September 1.

The following table shows the results of several tests carried out during the season :—

Variety.	Date of Ripening.	Hardiness of tree x Hardy. xx Very hardy.	Yield (average of Variety.)	Relative size of fruit.	Keeping qualities of fruit G-2½ months. M-1-2 months. P-less than 1 month.	Quality Test. (Preserves).		
						Flavour.	Appearance.	Effects of Cooking.
Gertrude	Early Sept	x	S.	Large	G.	Very Good	Yellow, handsome	Breaks up.
Bedford	Early Sept	xx	G.	Good size	M.	Very Good	Yellow, with red blush.	Breaks up.
Osman	Mid-Sept	xx	V.G.	Rather sm.	M.	Good	Red	Retains shape.
Seedling of Silvia	Late Sept	xx	G.	Medium	....	Peculiar, rather unpleasant	Greenish	Partly broken up.
Tony	Mid-Sept	xx	G.	Medium	M.	Good	Green (picked too green).	
Pioneer	Early Sept	xx	M.	Small	....	Medium	Yellow	Remains firm.
Norman	Mid-Sept	xx	G.	Small	....	Fairly good	Yellow-red	Remains firm.
Sweet Russet Crab	Late Sept	x	S.	Large	....	Good	Greenish-yellow, (picked too green)	Breaks up.
Elsa	Mid-Sept	xx	G.	Medium	....	Good	Yellow	Breaks up.
Columbia	Mid-Sept	xx	V.G.	Large	G.	Very good	Yellow	Partly broken.
Silvia	Late Aug	xx	V.G.	Good size	P.	Fair, peculiar	Yellow	
Seedling of Elsa	Mid-Sept	x	G.	Medium	....	Good	Yellow	Breaks up.
Alberta	Mid-Sept	xx	M.	"				

BRANDON.

A quantity of *Pyrus baccata* seed was sown in the fall, in order to produce hardy stock, for propagating the more desirable varieties of hybrid apples.

In the spring, 50 of the hardiest standard seedlings were transferred to the nursery row, to fill vacancies in the hill-side orchard. It is hoped that these will prove hardy in their permanent location. Several thousand seedlings are still in the nursery, and the hardiest of these will be transplanted to permanent positions as hardiness proves itself. The weaklings will be destroyed and more seedlings grown.

PLUMS.

The plum trees wintered well, and have been growing vigorously during the summer. The crop was not as large as in many previous seasons. The warm weather about the end of April, induced the blossoms to appear early, only to be destroyed by a sudden change in temperature on May 18. A large amount of bloom was thus destroyed. The native plums show a great deal of diversity in size, colour, quality and earliness. Several are very desirable and well worth propagating. With this end in view a pailful of plum pits was sown in the fall. Some of the seedlings will be transplanted and allowed to grow to maturity, while the rest will be used as stock for grafting on scions of the best trees in the orchard. The Cheney and Aitkin are both large, and fair quality, but appear to be rather late for a season like the one just past. Several of Hansen's hybrids are being tested; none appears to be perfectly hardy here. The Opata and Sapa bore some fruit of fair size and good quality. The Hanska ripens too late for this section, while the Skuga did not bear any fruit. Other plums under test are the Cheresota (hybrid) and Compass Cherry (hybrid). One specimen of the former fruited this season.

CURRANTS.

Probably the hardiest and most remunerative fruit-bearing plants for the West, are the currants. Twenty-seven varieties are under observation on this Farm and have proved to be hardy enough to withstand the winter without any protection. The crop this year was below the average. This was due to a severe frost late in May, which caught many of the blossoms which had come out in response to the warm sunny weather of late April and early May. Besides, the red and white varieties suffered very badly from aphis. The damp cloudy weather in June encouraged an attack of mildew, but this was successfully warded off by the use of ammoniacal copper carbonate. Among the red currants the most prolific were: Red Cross, Red Dutch, Raby Castle and Cumberland Red. For large-sized fruit, the Victoria Red and Cherry were easily the best. The white currants did not yield very well, as the insects were particularly damaging to them. The varieties grown are: Large White, White Cherry and White Grape. The black currants are, on the whole, stronger growing and more vigorous than either of the others. The heaviest yielders were: Magnus, Climax, Eagle, Kerry and Eclipse. The Buddenborg did not yield as well as in other years, but it is, as a rule, a high yielder with a fruit surpassing in size all the others. Other good varieties of black currants are, Saunders and Topsy.

Currants ripen during the latter part of July.

GOOSEBERRIES.

The crop of gooseberries was very good. Of the two varieties grown, the Houghton is the more prolific and the hardier, while the Downing bears a fruit of very large size,—far surpassing that of the former variety. It is safest to cover the bushes over winter with a mulch of strawy manure, to prevent killing back of the tender shoots. The bushes are fairly hardy and during the summer were attacked by but one pest—the currant worm, which was easily controlled by spraying with Paris green.

BRANDON.

RASPBERRIES.

The raspberry canes set a very large amount of fruit, but owing to the damage done by red spiders, the yield did not turn out to be so good.

Eight red varieties and one yellow are under test. Those that thrived best, and produced most fruit are: Caroline (yellow), Sunbeam, Ironclad, Herbert, Miller and Turner, in the order named. The largest fruit was produced by the Herbert, Ironclad and Turner, the quality also being very good. The Caroline is small, but of good flavour. The Sunbeam is small and sour, resembling the wild raspberry but is a good yielder. The King and Loudon have not done so well, and have produced but little fruit so far. The Minnetonka, and some additional plants of the varieties already named, were set out in 1914. Of these the Herbert and Sunbeam are the only ones that bore any fruit during 1915. The season for raspberries extends from the middle of July, until late in August.

STRAWBERRIES.

Four varieties of strawberries were planted in 1914. These are grown by the "hill system" (modified) in rows two and a half feet apart, and 15 inches apart in the row. Two of these,—Dakota and Senator Dunlap, wintered well and a large number of new plants were permitted to bear fruit or send out runners during the season and they were consequently strong and well-rooted before winter set in. About 500 of these new plants made very good progress during the summer, and should yield well next season. The yield of fruit this year was rather small,—the Dakota being the best. The strawberry is the earliest cultivated fruit, and as such it deserves special attention from the farmer who wishes to make the most of his farmstead orchard.

ARBORETUM AND GROUNDS.

The arboretum contains about 500 specimens of ornamental trees and shrubs. A number of hedges, windbreaks, avenue trees, etc., are also located on the grounds and along the drives. Two new ornamental hedges—Russian Olive, and Laurel-leaved Willow—were planted this year, while two others—the Siberian Crab and Southernwood (*Artemisia*) were removed. Tall hedges of *Caragana arborescens* and Charles IX lilac surround the vegetable gárden, the small-fruit orchard and the plum orchard, and afford excellent shelter. A feature well worth pointing out to visitors is the value of white spruce as a windbreak. If the farmers generally, knew the efficiency and beauty of a spruce hedge (trees planted 4 feet apart) they would not go on year after year without planting these for shelter and ornament on their home grounds.

The following are the chief evergreens on the grounds: (1) WHITE SPRUCE, very useful as a hedge, as an individual tree or in a mixed plantation; (2) BLACK SPRUCE, slow-growing, not very desirable for the home grounds; (3) BLUE SPRUCE, an excellent individual tree for ornamental purposes; (4) NORWAY SPRUCE, a few robust specimens are found on the grounds; (5) WHITE CEDAR, ornamental in its bush or tree form. A low hedge of this species is much admired by visitors; (6) SCOTCH PINE, and (7) RIGA PINE—both are hardy and robust—good as individual trees or in mixed plantation; (8) JACK PINE, is quite hardy, but the least ornamental of the pines; (9) RED PINE is quite hardy here—a few specimens 10 to 12 feet high are growing on the grounds; (10) STONE PINE, is very slow growing and rather scrubby; (11) MOUNTAIN PINE, low and bushy; hardy; (12) *Pinus pumila* (one specimen only, 7 feet high); (13) BALSAM FIR, ornamental, quite hardy; (14) CREEPING FIR (*Abies excelsa procumbens*); (15) TAMARACK (a conifer but not evergreen) is hardy and ornamental. It affords a pleasing contrast to heavier appearing trees, such as the spruces and pines; (16) JUNIPER (*Juniperus Sabina erecta*)—scrubby; kills back somewhat.

BRANDON.

The chief broad-leaved trees are: (1) Elm, this is perhaps the best shade and ornamental tree in Manitoba; (2) Ash, rather open, for a shade tree, but good in mixed plantations; (3) Basswood is very ornamental and has proven quite hardy at this Farm; (4) Birch succeeds well, and is ornamental. A fine tall specimen of cut-leaved weeping birch is frequently commented upon by visitors. Several bushes of low birch are also thriving well; (5) Ginnalian Maple—very ornamental, especially in the fall. This is very desirable for hedges; (6) Poplars. These are very rapid growers, and tower above the other trees in the arboretum. They are not long lived, several are already showing rot in the trunks. A few varieties found here are: *Populus petrowskiana, P. fastigiata, P. Simonii, P. angustifolia, P. tremuloides, P. balsamifera.* The poplars are good for shelter belts, mixed with other more permanent varieties, as they are quick growers. They are very hardy. (7) Willows. These are more hardy and quick growing. Some, such as the laurel-leaved willow, are very desirable as avenue and ornamental trees, as they grow up with a clean trunk, and a symmetrical top. They are also very resistant to insect attack. (8) Ash-leaved Maple, has until recently, been a general favourite, as an avenue or shade tree. It is quick growing and hardy, but very liable to insect attack. This tree should be abandoned, as an avenue tree, in favour of the more graceful elm, or the hardy laurel-leaved willow.

Other species growing in the arboretum, and showing the necessary degree of hardiness are: Oak, Ironwood, Smooth Sumac, Silver Maple, Native Alder and Buckthorn (three varieties). Flowering trees and shrubs are dealt with below.

CALENDAR OF FLOWERING SHRUBS AND TREES.

Beginning to Bloom in May, 1915.

*Native Plum	12th
*Missouri Currant (*Ribes aureum*)	17th
*Saskatoon (native)	18th
*Caragana	18th
Spiraea arguta	20th
Spiraea hypericifolia	20th
*Siberian Crab	20th
*Tartarian Honeysuckle	24th
*Common Lilac	24th
*Hawthorn	24th
*Chokecherry (native)	24th
*Mountain Ash	28th
*Viburnums (i.e. High bush cranberry, sheepberry, wayfaring tree and snowball	28th to June 1st

Beginning to Bloom in June.

*Common Barberry	2nd
*Cotoneaster	3rd
*Siberian Dogwood	3rd
*Spiraea Van Houttei	5th
*Canadian Barberry	4th
Purple-leaved Barberry	4th
Spiraea crutaegifolia	7th
Ninebark (*Physocarpus*)	20th
*Josika's Lilac	20th
*Villosa Lilac	20th
*Amurensis Lilac	20th
*Japanese Lilac	26th

Beginning to Bloom in July.

**Potentilla fruticosa*	10th. (bloom lasted until late in August.)
Spiraea tomentosa	20th. (tender but blooms long.)

N.B.—Those marked with an asterisk are perfectly hardy. The others kill back more or less each winter.

Brandon.

TREES AND SHRUBS FOR WINTER EFFECT.

Many people do not realize the possibilities in this regard. It is quite practicable to arrange a border with a view to the all-year-round effect; in this arrangement the fall and winter should receive due consideration. For colour effect in the fall, nothing can surpass the fiery red of the Ginnalian maple, the solid green of the common lilac, the light green and gold of the ninebark, combined with the glossy green of the laurel-leaved willow, the silver-grey of the Russian olive, and the purplish-red of the barberry. A good background of evergreens makes these colours all the more striking. In winter we are dependent on the display of persistent fruits, and the bark-colour of the trees and shrubs. White birch, trembling poplar, red willow, golden willow, dogwood, wild rose and highbush cranberry all furnish striking colours, which give a grateful contrast to the general dull tone of the deciduous border in winter. Enhancing effects are gained from the fruit display on the wild rose, cranberry, sheepberry, climbing bittersweet and native hawthorn. In all cases the evergreen should form the " backbone" of the border, in order to relieve the general whiteness of the landscape.

HEDGES.

The most useful hedges for windbreaks, etc., are: Manitoba maple, Ginnalian maple, caragana, common lilac, green ash, and white spruce. Among the best ornamental hedges are: Honeysuckle, caragana, buckthorn, sandthorn, Japanese lilac, nettle tree, white cedar, white spruce, and Ginnalian maple. Native shrubs such as buffalo berry, hawthorn, native plum, saskatoon, hazel nut, wolfberry, wild rose, etc., have shown considerable merit as hedges, and may be recommended where cultivated varieties cannot be obtained.

ROSES.

About fifty new rose bushes were planted last spring. These succeeded variously, some giving a creditable amount of bloom during the season, while most of the others thrived quite well and should flower next summer. A few old bushes of Rugosa roses and Austrian briar roses, (Persian yellow) flowered quite well, the latter coming into bloom on June 20. The rose-beds were covered with straw in the fall.

The following varieties bloomed during the season of 1915:—

Variety.	Began to Bloom.	Amount of Bloom.	Remarks.
Austrian Briar Rose—			
(Persian Yellow)	June 20	M.	Yellow, double.
Rugosa Roses—			
Calocarpa	July 11	L.	Deep rose, single.
New Century (Hybrid)	Aug. 5	....	Rosy Pink.
Moss Rose—			
Salet	" 13	....	Deep Pink; double.
Tea Rose—			
Souvenir de Pierre Notting	" 16	S.	Indian yellow. Small double flowers.
Hybrid Tea Rose—			
Gruss an Teplitz	July 12	L.	Crimson. Double.
La France	" 18	S.	Satin pink. Fine Blossom.
Molly Sharman Crawford	" 20	L.	White; double.
Geo. C. Waud	" 25	S.	Orange red.
Lady Ashtown	" 27	....	Soft Rose colour. Double.
Mrs. Cornwallis West	" 27	S.	Pink.
Mme. Segond Weber	Aug. 7	....	Bright Salmon Rose. Double.
Ecarlate	" 12	S.	Bright Scarlet. Semi-double.
Mrs. Aaron Ward	" 12	S.	Shades of Indian Yellow. Double.
Mme. Abel Chatenay	" 19	S.	Rose, with shade of salmon; fine double rose.
Hybrid Perpetual Roses—			
Magna Charta	July 13	M.	Deep Pink. Fine double.
Jules Margottin	Aug. 11	M.	Rose coloured. Single.
Mrs. R. G. Sharman Crawford	" 7	L.	Rosy Pink. Double.
Paul Neyron	" 18	....	Deep rose colour.

BRANDON.

LAWNS.

A new lawn, seeded down to Kentucky blue grass about the end of April, developed a fine dense sward during the summer. The portulaca and barnyard grass were serious weeds, but after they were pulled up once, the grass got ahead of them and should keep down all weeds in the future. Portions of lawns that were seeded down in June did not produce any results on account of the drought.

INSECT PESTS.

The season was very bad, from the point of view of insect injury. The most serious insects were the aphids and cankerworms on the maple. It is important to educate the public and arouse public sentiment in favour of insect destruction, as otherwise, insect pests will greatly hamper the operations of the horticulturist and the general farmer.

Several species of aphids were observed doing damage at this Farm. They infested maples, viburnums, currant bushes, plum trees, dogwood, balsam fir, elm and others. Kerosene emulsion and tobacco-and-soap solution are effective remedies, except in the case of the woolly aphis of the elm. This insect rolls or curls up in the leaves into galls, which it uses for breeding and hibernating quarters. The emulsion cannot penetrate these galls, to smother the insect. As in the case of the galls of the *Pemphigus vagabundus* (another aphid), the best method of control is handpicking and burning the galls and contents.

Insects which can be controlled by poisonous sprays are *cankerworm* (the fall-cankerworm appeared here), *spruce budworm* and *tent caterpillar.* A species of this last insect was found on some of the native shrubs but did not affect the arboretum specimens.

Gall forming insects of minor importance: (1) A species of Cecidomyidæ on the terminal buds of the maples in the spring. (2) *Eriophyes acericolæ*—mites causing innumerable small galls on the plum tree leaves. (3) Frost mites (Genus *Eriophyes*) on the leaves of maples and some other deciduous trees.

An insect which is likely to cause serious trouble in the West is the *Negundo Twig Borer.* The larvæ inhabits the petioles and tender growing shoots of the maple, causing enlargements and consequent destruction of the affected part. No sprays will reach the seat of the trouble.

Red Spiders attacked the small spruce hedge but were controlled by a spray of tobacco-soap solution.

A considerable number of plums were spoiled by the *Plum Gouger.* Horticulturists in the West have noted its work for some years past.

A *Snout Beetle* (Rhynchitis bicolor) destroyed many of the flower buds on the cultivated roses. These should be hand-picked constantly, as they are very destructive to roses.

The summer was in many respects unfavourable to a good display among annuals and perennials. No month was entirely free from frosts, and as early as August 24 the thermometer registered 3 degrees of frost and 6 degrees on August 26. This was succeeded on August 31 by the maximum of the season, viz., 94·5. Several night frosts occurred during the first part of September. A continuous drought lasting from late July until early September, also affected the flowers adversely. Considering the circumstances, the display was very good, and lasted well into the fall. Altogether about 300 varieties of bulbs, perennials, annuals and tubers (dahlias) were grown outside during the season. Observations were made regarding the hardiness and general desirability of the different varieties.

BRANDON.

BULBS (OUTSIDE).

Nineteen varieties of tulips were planted outside in the fall of 1914 and mulched for the winter. These made an excellent showing for three weeks succeeding May 5. They were removed to make room for the annuals about the beginning of June.

BULBS (INSIDE).

A number of bulbs were potted in the fall for winter use. They gave very satisfactory results and by the use of different kinds a succession of bloom was possible from Christmas until spring. The following kinds are recommended for use in order to give length of season. They are given in the order in which they should be used:—

Roman Hyacinths.	
Dutch Hyacinths.	
Golden Spur	Daffodil.
Sir Watkin	Daffodil.
Van Sion	Double Daffodil.
Prince of Austria	Tulip.
Victoria	Daffodil.
Emperor	Daffodil.
Murillo	Tulip.

There are very many other good kinds but these give a good selection and have given excellent results here.

PERENNIALS.

The perennials in the old border made a good showing, the chief being: varieties of iris, pæonies, day lilies, heliotrope, campanula and gypsophila. A considerable number of plants were added to the new border, but many of these died owing to unfavourable spring conditions. The perennials may be grouped according to the dates on which they flower, thus:—

May-flowering:—*Anemone sylvestris, Scilla sibirica, Phlox subulata, Viola pedata, Trollius caucasicus.*

June-flowering:—*Aquilegia, Dicentra spectabilis* (Bleeding heart), *Hesperis matronalis, Clematis recta,* Snowball Daisy.

July-flowering:—*Delphinium, Gaillardia, Coreopsis, Spiræa Aruncus, Dianthus chinensis,* (pinks), *Platycodon grandiflorum,* Pæonies, *Hemerocallis, Veronica spicata, Lychnis chalcedonica, Heliotropium peruvianum, Solidago* (Golden rod), *Sedum* (Stone crop), *Centaurea, Campanula tridentata, Gypsophila, Monarda* (Horse mint), *Dianthus barbatus* (Sweet William), Cactus (*Opuntia*).

August-flowering:—*Spiræa Ulmaria, Rudbeckia, Helianthus* (Sunflower), *Althæa* (Hollyhocks), Perennial Phlox.

September-flowering:—*Chrysanthemum uliginosum* and *Lupinus polyphyllus.*

Many of these flower quite late in the season, especially chrysanthemum, gaillardia, rudbeckia, hollyhocks, veronica, solidago, phlox, helianthus and snowball daisy.

DAHLIAS.

None of the dahlias did well on account of the frosts late in August. Very few had bloomed at that time, as they were not set out until July.

ANNUALS.

The table given below shows the flowering periods of some of the best annuals. As will be seen from the graphic representation given, the best display was on from early July to late August. A few hardy desirable types lasted until the middle of October.

FLOWER Calendar, 1915 (Annuals).

Name.	Height.	June.				July.				August.				September.				October.		DR	FR	Remarks.
	Inches.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2			
Tagetes signata pumila	8		....	....	....	....	....	.	....	....	....	....	....	....	.					G	H	Profusion of bloom.
Celosia plumosa	3		....	....	....	....	....	....	....	....	....	....								G	T	Inconspicuous bloom.
Bartonia aurea	13		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		G	H	
Pansies (10 varieties)				....	....	....	.	....	....	....	....	.	....	....	....	....	....	....	....	G	H	Less bloom during drought
Chrysanthemums (2 varieties)	19–20			....	....	....	....	....	....	....	....	....	....							G	H	
Arctotis grandis	20			....	....	....	....	....	.	....	....	....	....	....	....	....	....	....		G	H	
Calendula (2 varieties)	18–20					....	.	....	....	....	....	....	....	....	....	....	....	....	....	G	H	Sturdy plants; showy blossoms.
Clarkia elegans	21				....	....	.	....	....	....	....	....	....							G	H–H	Blossoms delicate, of light colour.
Cosmea, mixed	45				....	....	....		....	....	....	....	....							G	H–H	Straggly plant.
Dimorphotheca aurantiaca	10				....	....	....	.	....	....	....	....	....	....	....	....	....			G	H	Persistent bloomer.
Petunia (3 varieties)	12				....	....	.	.		....	....	....	....	....						P		Unsightly during drought.
Phlox (7 varieties)	12–16				....	....	....	....	.	....	....	....	....	....	....	....	....	....		VG	H	Attractive; persistent bloomer.
Godetia (Bridesmaid)	15				.	....	....	....	....	....	....	....	....	....						M	H	Blossoms delicately coloured and attractive.
Godetia (other varieties)	12–18							....	....	....	....	....	....	....	....	....	....	....	.	M	H	Blossoms delicately coloured and attractive.
Nemesia (6 varieties)	10–12				....	....	....	....	....	....	....	....	....	....						M	H	Very desirable for borders, good colours.
Acroclinium (Everlasting)	18					....	....	....	....	....	....	....	....	....	....	....	....	....		G	H	Blossoms stiff and not fragrant.
Abronia umbellata						....	....	....	....	....	....	....	....	....	....	....	....	....				

BRANDON.

Name.	Height.	June.				July.				August.				September.				October.		DR	FR	Remarks.
	Inches.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2			
Balsam (3 varieties)	12–14					....	....	....	....	....	....	....								M	T	Very tender plant.
Brachycome	10					....	....	....	....	....	....	....	....							G	H–H	
Lobelia	10						....	....	....	....	....	....	....	....						M	H–H	Good for borders.
Marigold (2 varieties)	24					....	....	....	....	....	....	....	....							G	H–H	
Mignonette	12					....	....	....	....	....	....	....	....	....	....	....	....			G	H	Sweet scented.
Portulaca	8					....	....	....	....	....	....	....	....	....						G	H	Low and spreading plants.
Schizanthus	16					....	....	....	....	....	....	....	....							M	H–H	Blossoming spikes very attractive.
Viscaria cardinalis	20					....	....	....	....	....	....	....	....							M	H	Bloomed freely till the 20th Aug.
Centranthus	12					....	....	....	....	....	....	....	....	....								
Verbena (6 varieties)	8–15						....	....	....	....	....	....	....	....	....	....	....	....		V.G	H	Very desirable, hardy.
Coreopsis (2 varieties)	24–28								....	....	....	....	....							G	H–H	Blossoms froze late August
Cockscomb							....	....	....	....	....	....								G	T	
Gaillardia	17						....	....	....	....	....	....	....	....	....	....	....			G	H	Strong plants, rather showy.
Rudbeckia	22						....	....	....	....	....	....	....	....	....	....	....			G	H	
Salpiglossis (2 varieties)	25						....	....	....	....	....	....	....						xx	G	H–H	Blossoms frozen, late Aug.
Stocks (6 varieties)	12					....	....	....	....	....	....	....	....	....	....	....	....	....	....	G	H	Desirable flowers.

Name.	Height.	June.				July.				August.				September.				October.		DR	FR	Remarks.
	Inches.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2			
Sweet Sultan	26						...	....	....	....	....	....	....	....						G	H	
Antirrhinum—																						
Tall	22							..	....	....	....	....	....	....	....					G	H	Growth rank.
Intermediate (8 varieties)	16						....	....	....	....	....	....	....	....	..					G	H	Showy colours; good bloomer.
Cornflower	30							....	....	....	....	...	....	....	....	....	....	....	....	G	H	Showy colours; good bloomer.
Dianthus Heddewigii	6							....	....	....	....	....	....	....	....	....	....	....	. xx .	G	H	
Nigella (Miss Jekyll)	18							....	....	....	....	....	....	....	....					G	H	
Linum grandiflorum	14								....	....	...	....	....	....	....					G	H	Blossoms very fine.
Eschscholtzia	14								....	....	....	....	....	....	....	....	....	....		G	H	Blossoms persistently.
Sweet Peas (65 varieties)									....	....	....	....	....	....	....	....	....	....		G	H	
Candytuft	9									....	....	....	....	....	....	....	....	....	xx	V.G	H	Blooms intermittently.
Helichrysum (Everlasting)	30									....	....	....	....	....	....	....	....	....	. xx .	G	H	
Larkspur (3 varieties)	38									....	....	....	....	....	....	....	....	....		G	H	
Lupinus	16									....	....	....	....	....	....	....	....	....		G	H	
Nasturtium (3 varieties)	9									....	....	....	....	..						M	H-H	Spikes bloom freely.
Leptosiphon	5									....	....	....	....	....	....	....	....	....		G.	H	
Antirrhinum, Tom Thumb (6 varieties)	7-10										....	....	....	....	....							Very small; blooms well.
Snowball Aster										....	....	....	....	....	....	....	....	....		G	H	

Name.	Height.	June.				July.				August.				September.				Octobre.		DR	FR	Remarks.
	Inches.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2			
Early Branching Asters....										....	....	....	....	....	....	....				G	H	
Other Variety of Asters....										....	....	....	....	....	....	....	....	....		G	H	
Jacobaea, Double..........	13										....	....	....							G		Bloom very shortlived.
Malope....................	15										....	....	....	....	....					G	H-H	
Carnation (Marguerite).....	20											....	....	....	....	....	....	....	.xxx.	G	H	
Poppy, Shirley............	26									....	....	....	....	....						G	H	
Poppy, Carnation Mixed....	18									....	....	....	....	..						G	H	

N.B.—xxx—Blossoms lasted till snow fell in early November.
xx—Bloom lasted until plants were dug up on 12th October; most were declining, however.

Explanations:—The dotted line shows graphically the flowering period of each variety. Each month is divided into four divisions, corresponding roughly to the weeks. Under "**Remarks**"—Dr. R. means drought resistent qualities, and Fr. R. refers to the hardiness of plants with reference to frost. G—good; **M**—Medium; P—Poor; H—hardy; H-H—half hardy; T—tender.

BRANDON.

SWEET PEAS.

The display of sweet peas was somewhat lessened by the drought which lasted during the main flowering season, viz., August and early September. Sixty-five varieties were grown. The border was checked over every ten days for general hardiness, profusion and colour of bloom of the different varieties. The table includes twenty-five of the best:

PRINCIPAL Varieties of Sweet Peas.

Name of variety.	Length of vines.	Colour of bloom.	Amount of bloom.	Duration of bloom.	General Hardiness.	Remarks.
White—						
(1) Etta Dyke	3′ 6″	Pure white	Large	26th July to 20th Sept	Good	
Nora Unwin	3′ 11″	Pure white	Large	31st July to 4th Oct	"	Very vigorous and profuse bloom.
Cream—						
Mrs. C. W. Breadmore	3′ 6″	Creamy white, edge pink	Medium	24th July to 20th Sept	"	
(2) Queen Victoria	3′ 8″	Primrose (cream)	Large	22nd July to 5th Oct	"	
Clara Curtis	3′ 8″	Primrose	Large	25th July to 4th Oct	"	
Pink, etc.—						
Elfrida Pearson	3′ 9″	Salmon Pink	Large	22nd July to 1st Oct		Double standards.
Mrs. Cuthbertson	3′ 5″	Rose Pink, wings nearly white	Medium	24th July to 4th Oct	Medium	Bloom intermittent but very fine.
Mrs. R. Hallan	3′ 6″	Rich pink	Large	27th July to 4th Oct	Good	Profusion of bloom.
(3) Hercules	3′ 9″	Rose pink	Large	25th July to 1st Oct	"	
Charles Foster	4′ 2″	Suffused pink, mauve and rose	Large	28th July to 22nd Sept	"	Strong, tall vines; double standards.
Prima Donna	4′ 8″	Pure pink	Large	1st Aug. to 4th Oct	"	Tall vines, blooms very freely.
Red, Salmon, etc.—						
Rose du Barri	3′ 3″	Rich rose red	Large	27th July to 20th Sept	Medium	Colour, very pleasing, vines very small.
(4) Queen Alexandra	3′ 6″	Rich scarlet	Large	24th July to 28th Sept	Good	Bloomed very freely.
Decorator	3′ 8″	Rose red, shade salmon.	Medium	23rd July to 4th Oct	"	Persistent bloomer.
Vermilion Brilliant	4′	Crimson, (Vermilion)	Medium	21st July to 4th Oct	Good	Blooms early and lasts well.
(4) John Ingman	3′ 11″	Rosy Carmine (red)	Large	23rd July to 4th Oct	"	Pleasing shade of colour. Strong bloomer.
Lavender, blue, etc.—						
Captivation Spencer	3′ 3″	Red, tinged purple	Medium	26th July to 12th Sept	Good	Very pleasing shade of colour.
Tennant Spencer	4′	Rosy Purple	Large	24th July to 22nd Sept	"	Large amount of bloom. Short vines.
Asta Ohn	3′ 6″	Lavender	Large	24th July to 29th Sept	"	

(5) **Florence Nightingale**	4′	Deep lavender, suffused rose-pink	Large	1st Aug. to 4th Oct.	"	Fine bloom.
Lady Grisel Hamilton	3′ 11″	Pale lavender	Large	20th July to 4th Oct.	"	Long blossoming season.
Lord Nelson	3′ 3″	Deep navy blue	Large	23rd July to 1st Oct.	"	Vines rather small.
Maroon—						
(6) **Nubian**	3′ 5″	Maroon	Medium	30th July to 19th Sept.	"	
Variegated—						
America Spencer	3′ 3″	White, marked crimson.	Large	30th July to 4th Oct.	"	
(7) **Mrs. W. J. Unwin**		White, marked with scarlet	Medium	25th July to 20th Sept.	"	

Other good varieties are:—

Group 2.—Mrs. Collier, Mrs. Routzahn.
Group 3.—Countess Spencer.
Group 4.—Stirling Stent, Barbara, Miss Wilmott, Helen Lewis.
Group 5.—Irish Belle, or "Dream", Mrs. Walter Wright.

BRANDON.

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT, W. H. GIBSON, B.S.A.

The growing season of 1915 was not favourable for early vegetables. The months of April, May, and the early part of June were very dry, and vegetable seeds came up somewhat unevenly, and, in a few cases, had to be resown. A moderate rainfall was received during the latter part of June and throughout July, August, and September. This, with an abundance of sunshine, brought all vegetables along well and an average crop was obtained.

Frost was experienced every month during the season, which checked tender flowers and vegetables to some extent.

Fruit trees and bushes blossomed profusely but a severe frost on June 7 killed all bloom, and no fruit was obtained.

Potatoes gave good yields on the Experimental Farm, but throughout the district the crop was not up to the average.

Exhibits of flowers and vegetables were made at the summer fairs held in Regina, Swift Current, Wolseley, and Whitewood.

Insect pests gave some trouble during the early summer but were easily kept in control by the application of an insecticide at the proper season.

FRUIT TREES.

There are at present about one thousand cross-bred and standard apple trees in the several orchards on the Indian Head Farm. The cross-bred varieties were originated by the late Dr. Wm. Saunders, and have been under test at this farm since 1903. These were produced by crossing standard varieties of apples with the hardy Siberian crab (*Pyrus baccata*). The trees have proved perfectly hardy at Indian Head, and produce good crops almost every season. The fruit is about the size of an ordinary crab, and is suitable for preserving and making jelly. Severe frost during the early part of June prevented any crop being obtained this past season. Those that have proved the best are Charles, Columbia, Silvia, Jewel, Prince, Pioneer, Tony and Eve.

Of late years, considerable attention has been given to growing standard apples, the object being to find some varieties hardy enough to withstand our severe seasons. In 1913, fifty 2-year old trees were obtained from Mr. A. P. Stevenson of Dunston, Manitoba. These were set out in a well sheltered location, and have come through their third winter in perfect condition. In 1914 an additional 150 2-year old trees were set out but, owing to the dry season, made a very poor growth and the following spring 20 per cent were found to be dead. Those that came through made a good growth this past season and went into the winter in fine condition. The varieties under test are Wealthy, Hibernal, Blushed Calville, Volga Anis, Anisette, Repka Kislaga, Charlamoff, Hyslop, Transcendent, Philip, Lyman, and Whitney. The last five named are crab apples.

PLUMS.

Until recent years very little success could be reported with plums. Up to 1908 this work had consisted in selecting superior strains of the native Manitoba sorts, and by such methods some very good fruit was obtained. In the spring of 1908 a number of cross-bred trees were received from Professor Hansen of Brookings, South Dakota. The majority of these have proved to be perfectly hardy, and some very fine fruit has been obtained from several varieties. For the past two seasons, buds and grafts have been taken from the best trees and used on native stock. In this manner some good trees have been propagated and will be set out in the orchard this coming spring. The varieties worthy of mention are Assiniboine, Tapa, Hanska, Winnipeg, Owanka and Huya.

The Compass cherry is perfectly hardy and bears large crops almost every season, but on account of its lateness in ripening cannot be recommended as a suitable fruit for this district.

SMALL FRUITS.

The plantation of small fruits set out in 1912 has made good progress but, owing to spring frosts, no fruit was obtained this past season. With the exception of gooseberries, nearly all bush fruits have proved suitable for Southern Saskatchewan. Gooseberries are subject to severe winter killing and, unless some protection is afforded during winter, very little success will be attained.

Raspberries also require winter protection and this is best accomplished by bending down the canes and covering with several inches of earth. If left covered until about the 10th of May they are not liable to come into bloom until after all danger of frost is over. Owing to killing frosts being experienced up to June 15, this plan was unsuccessful this past season.

The following are the names of some of the best varieties now under test:

Raspberries.—Herbert, Cuthbert, Early King, Marlboro, Sunbeam and Golden Queen (white).

Red Currants.—Victoria Red, Red Dutch, Red Grape, Greenfield Red and Rankins Red.

White Currants.—White Grape, White Cherry, Verrieres White and White Imperial.

Black Currants.—Climax, Dominion, Eagle, Eclipse, Magnus, Topsy and Saunders.

Gooseberries.—Downing, Houghton and Smith Improved.

STRAWBERRIES.

As a rule strawberries give a fair crop almost every season but, owing to spring and summer frosts, very few were obtained this past summer. The beds should be protected in the winter with a covering of straw or leaves. By leaving the covering on the beds until about the 15th of May, the growth is held in check until danger from late spring frosts is over. Senator Dunlap and Beder Wood are the two varieties that have given the best results at this farm.

EXPERIMENTS WITH VEGETABLES.

Potatoes.—Twenty-three varieties were under test in 1915. The seed was planted on May 14 in rows 30 inches apart and the sets eight inches apart in the row. Cultivation was given three times before hilling up on July 8. Potatoes were dug on September 30 and gave a very good crop considering that the season's rainfall was far below the average. Below is given a list of the varieties under test with the yield per acre.

VARIETY TEST.

Variety.	Character of soil.	Yield per acre.		Form and Colour.
		Bush.	lb.	
Carman, No. 1	Clay loam	567	36	Oval—White.
New Queen	"	547	48	Oval—Pink and White.
Morgan Seedling	"	543	24	Round—White.
Dreer Standard	"	534	36	Oval—White.
Vermont Gold Coin	"	530	12	Oval—White.
Everett	"	523	36	Long—Pink.
Wee MacGregor (selected)	"	517		Oval—White.
Manitoba Wonder	"	517		Oval—White.
Wee MacGregor	"	508	12	Oval—White.
Early Norther	"	503	48	Long—Red.
Table Talk	"	500	40	Oval—White.
Houlton Rose	"	500	32	Oval—Red.
Dalmeny Beauty	"	470	48	Oval—White.
Eureka Extra Early	"	470	48	Oval—White.
Early Hebron	"	468	36	Long—Pink and white.
Early Ohio (selected)	"	466	24	Oval—Red.
Empire State	"	466	24	Long—White.
Money Maker	"	462		Round—White.
Rawlings Kidney	"	448	48	Oval—White.
Bermuda Early	"	442	12	Oval—Red.
Irish Cobbler	"	429		Round—White.
Late Puritan	"	424	36	Oval—White.
Early Ohio	"	415	48	Oval—Red.
Vick Extra Early (O.S. 1914)	"	292	36	Oval—Pink.
Morgan Seedling (O.S. 1914)	"	39	36	Round—White.

EXPERIMENTS with Potatoes.

Variety.	Nature of Experiment.	Yield per acre.	
		Bush.	lb.
Wee MacGregor	Small potatoes, ½ to 1 inch, uncut	495	
Early Ohio	Small potatoes, 1 to ½ inch, uncut	451	
Wee MacGregor	Medium sized potatoes cut to one eye	436	52
Early Ohio	Medium sized potatoes cut to one eye	333	24
Wee MacGregor	Medium sized potatoes cut to two eyes	510	14
Early Ohio	Medium sized potatoes cut to two eyes	459	48
Wee MacGregor	Medium sized potatoes cut to three eyes	481	48
Early Ohio	Medium sized potatoes cut to three eyes	369	36
Wee MacGregor	Seed coated with fresh lime when cut	521	24
Early Ohio	Seed coated with fresh lime when cut	374	
Wee MacGregor	Seed planted without lime coating	499	24
Early Ohio	Seed planted without lime coating	391	36
Wee MacGregor	Seed sprouted before planting	525	48
Early Ohio	Seed sprouted before planting	466	24
Vick Extra Early	Seed sprouted before planting	490	36
Wee MacGregor	Seed planted on May 31st	495	
Early Ohio	Seed planted on May 31st	431	12
Wee MacGregor	Seed planted on June 7th	420	12
Early Ohio	Seed planted on June 7th	360	48
Wee MacGregor	Seed planted on June 21st	345	24
Early Ohio	Seed planted on June 21st	365	12
Early Ohio	Seed planted on July 5th	270	36

In addition to the above work a series of cultural experiments was commenced on one-twentieth acre plots. These experiments will extend over a period of five years in order to arrive at an average for a number of seasons. An experiment was also commenced with a view of ascertaining the cost of growing potatoes under existing conditions. An exact record was kept of the labour on an acre plot up to the time the potatoes were stored away in the root cellar. The total, including seed and rent of land, amounted to $84.15. The yield of marketable potatoes was 401 bushels which brought the cost practically 21 cents per bushel. A walking plough was used for opening up the drills, and also for ploughing out the crop. By the use of modern potato machinery which would be employed in planting large areas, the cost could be considerably reduced.

VARIETY TESTS WITH VEGETABLES.

Asparagus.—Owing to the dry weather early in the season this crop was almost a failure. Several small pickings were obtained from Barr Mammoth and Conover Colossal. The quality was very poor, the stalks being tough and stringy.

Beans.—Thirteen varieties were sown in the garden on the 8th of May. Frost on September 11 destroyed all the vines and no seed ripened. Below is given a list of the varieties under test.

Variety.	Date of Blooming.	Ready for use.	Remarks on crop.
New White Seeded Green Pod	July 18	Aug. 11	Good crop of green pods.
Bountiful Green Bush	“ 22	“ 14	“ “ “
Grennell Rustless Wax	“ 23	“ 6	Fair “ “
Refugee or 1000 to 1	“ 26	“ 24	Good “ “
Keeney Golden Wax	“ 26	“ 16	“ “ “
Stringless Green Pod	“ 24	“ 14	“ “ “
Valentine Wax	“ 22	“ 12	“ “ “
Wardwell Kidney Wax	“ 20	“ 9	“ “ “
Extra Early Valentine	“ 30	“ 16	“ “ “
Extra Early Refugee	“ 26	“ 18	Very poor crop.
Michigan White Wax	“ 30	“ 20	Good crop of green pods.
Keeney Rustless Wax (I.H. Seed)	“ 26	“ 16	Extra good crop of green pods.
Wardwell Kidney Wax (I.H. Seed)	“ 26	“ 16	“ “ “

Beets.—Seven varieties were sown in the garden on May 6. The roots were taken up on October 7 and yielded a satisfactory crop. The rows were 2 feet apart, and plants were thinned to 3 inches apart in the row.

A test was also made in thinning plants 2, 3, 4 inches apart in the rows. Those thinned to 2 inches gave the largest yield but roots were undersized. Those thinned to 3 inches yielded less but roots were of good size and quality. Those thinned to 4 inches gave the smallest yield, while roots were oversized and coarse in quality.

Variety.	In use.	Yield per acre.		Remarks.
		Bush.	lb.	
Eclipse	Aug. 4	556	36	Quality excellent.
Ruby Dulcet	“ 10	544	30	“ “
Early Model	“ 4	538	27	“ medium.
Crosby Egyptian	“ 10	484		“ good.
Rennie Cardinal Globe	“ 4	459	48	“ “
New Meteor	July 30	447	22	“ “
New Early Black Red Ball	Aug. 14	423	30	“ medium.

Brussels Sprouts.—One variety, Dwarf Improved, was sown in the hot-house on March 28, and transplanted into the garden on June 2. The plants made a strong growth but failed to form sprouts.

INDIAN HEAD.

Cabbage.—Eleven varieties were sown in the hot-house on March 23 and transplanted into the garden on June 2. The crop obtained was quite satisfactory. Very little damage was done by the cut-worm or cabbage butterfly during the season. In order to prevent the butterfly from depositing eggs on the cabbage a number of plants were covered with cheese cloth at the time of transplanting. The result was that while the heads were entirely free from worms, they were small and soft and quite unfit for winter keeping.

CABBAGE.—Test of Varieties.

Variety.	Ready for use.	Average weight per head.	Remarks.
		lb.	
Glory of Enkhuizen	Sept. 10	11	Very fine quality.
Extra Amager Danish Roundhead	" 6	10	Extra fine quality.
Danish Summer Ballhead	Aug. 30	10	Good solid heads.
Extra Amager Danish Ballhead	Sept. 8	10	Extra fine heads.
Nofalt	Aug. 4	9	Good solid heads.
Flat Swedish	Sept. 6	9	Heads very soft.
Fottler Improved Brunswick	" 10	8	Medium quality.
Early Jersey Wakefield	July 28	4½	Medium quality.
Copenhagen Market	" 30	4	Heads good quality.
Rennie XXX Early Summer	" 26	4	Medium quality.
Paris Market, Very Early	" 22	3	Good quality.

Cauliflower.—Four varieties were sown in the hot-house on March 24, and transplanted into the garden on May 4. An average crop was obtained. A number of plants were protected by a covering of cheese cloth during the season. As a result, while the heads were free from worms, they were very small and of poor quality.

Variety.	Ready for use.	Average weight per head.	Remarks.
		lb.	
Early Snowball	June 28	4	Quality good.
Extra Selected Early Dwarf Erfurt	" 30	3	" medium.
Gilt Edge	July 9	3	" "
Danish Giant Dryweather	" 12	2	" "

Carrots.—Four varieties were sown on April 16, and the crop taken up on September 29. The yield was satisfactory. A test was also made in thinning the plants to different distances. Those thinned to 1½ inches gave the largest yield but the roots were undersized. Those thinned to two inches, while yielding less than the first lot, gave good sized carrots, while those that were thinned to three inches gave the smallest yield of large smooth roots.

Variety.	In use.	Yield per acre.		Remarks.
		Bush.	lb.	
Half Long Chantenay	July 30	689		Good crop and quality.
Improved Nantes	" 24	618	20	Good crop and quality.
Early Scarlet Horn	" 24	583		Good crop and medium quality.
Improved Danvers Half Long	" 26	565	20	Good crop and medium quality.

INDIAN HEAD.

Celery.—Eight varieties were sown in the hot-house on March 18, and transplanted into the garden on June 16. The different varieties were planted in trenches 18 inches deep and 12 inches wide. In the bottom of the trench 6 to 8 inches of well rotted manure was placed. On the top of the manure 6 inches of good black loam was packed in solid and the celery planted in this earth. As the plants grew the top earth was hilled up around them in order to blanch the stalks. As celery requires lots of moisture during the growing season it is well to give it a good soaking once or twice each week. A test was also made of several methods of blanching. The plants were planted on the flat and when about 12 inches high the first lot was protected with a soft pliable material similar to heavy roofing felt. This was tacked to pickets set on each side of the row. The second method was with 1 by 12-inch boards set on edge on each side of the row. The third test was with earth hilled up against the stalks. The first two lots were tough and stringy with a very poor flavour. The lot that was earthed up was excellent in flavour and crispness. The following are the varieties under test this season.

Variety.	In use.	Weight per 12 heads.	Remarks.
		lb.	
French Success	Sept. 14	28	Good yield and quality.
Paris Golden Yellow	“ 28	26	“ “
Giant Pascal	“ 30	25	“ “
Evans Triumph	“ 30	25	“ “
White Plume	Aug. 24	24	“ “
Noll Magnificent	Sept. 30	24	Medium in quality.
Improved White Plume	Aug. 4	24	“ “

Garden Corn.—Fifteen varieties of garden corn were planted on May 22. Only a few varieties matured sufficiently for table use. None matured for seed. The best crop was obtained from the home grown seed of White Squaw which for the past few seasons has been selected from the largest and earliest cobs.

Variety.	In use.	Remarks.
White Squaw	Sept. 4	Cobs small, quality good.
Early Iowa	Oct. 2	Cobs large, poorly filled.......
Pocahontas Sweet		Cobs did not mature.
Metropolitan Sweet		
Early Dawn		
Perkins Extra Early Market		
Extra Early Adams		
Golden Bantam		
Early Fordhook		
Early Malcolm	Oct. 2	Cobs large but poorly filled.
Malakoff	“ 4	Cobs small but poorly filled.
Peep O'day		Cobs did not mature.
Improved Squaw, I.H. Seed	Sept. 4	Cobs small, quality very good.
Red Squaw, I.H. Seed	Aug. 28	Cobs small, quality very good.
White Squaw, Selected I.H	“ 28	Cobs large and excellent quality

Cucumbers.—Ten varieties were under test. The seed was sown in the garden on June 15, and plants protected during the season by a frame and glass. Owing to the fact that the fruit did not set until very late in the season a very small crop was obtained. Six plants of Rollinson Telegraph were started in the hot-house and transplanted to a cold frame on June 15. These were protected by glass during the season and produced 319 pounds of excellent cucumbers.

Variety.	In use.	Weight per plant.	Remarks.
		Lb.	
Giant Pera	Sept. 3	4	Small, medium quality.
Prize Pickling	" 9	3	Small, medium quality.
Extra Early Russian	Aug. 30	4	Small, medium quality.
Peerless or Improved White Spine	" 28	6	Medium size.
Cool and Crisp	Sept. 7	2	Small, poor quality.
Davis Perfect			No fruit set.
Fordhook Famous			No fruit set.
Rennie XXX Table	Sept. 7	5	Fair size and quality.
Evergreen Beauty			No fruit set.
Rollison Telegraph	June 27	53	Large, excellent.

Leeks.—Two varieties were under test. The seed was sown in the hot-house on March 25 and the plants transplanted to the garden on June 16. The plants were set in a trench similar to that used for celery and as the stalks grew they were hilled up with earth in order to bleach. The leek is a vegetable that deserves more attention than it at present receives in the gardens of Southern Saskatchewan. The varieties under test were French Carentan and English Glory. The first-named gave a very good crop, while the latter, resembling Musselburgh, was not up to the average.

Lettuce.—There were eight varieties under test. The seed was sown on April 16, and the first was ready for use on June 18. The fore part of the season being dry and windy, the plants did not get a good start and, in consequence, the crop was not up to the average. The following table will give a list of the varieties under test:—

Variety.	In use.	Remarks.
Giant Crystal Head	June 26	Crop fair, quality good.
Grand Rapids forcing	" 18	Crop fair, quality good.
Hanson Improved	" 30	Crop medium, quality fair.
Iceberg	" 20	Crop medium, quality fair.
Dreer All Heart	" 30	Crop and quality poor.
Rennie Nonpareil	" 26	Crop and quality good.
Deacon	" 28	Crop and quality medium.
May Queen	July 4	Crop and quality good.

Muskmelon.—Four varieties were under test. The seed was sown in the hot-house on March 24. The plants were set out in cold frames on June 14. The frames were covered on cool nights, and opened up during the day time. A splendid crop of large, well-flavoured fruit was thus obtained. It is interesting to note that the seed saved from fruit grown at this Farm gave the largest crop and also the largest melons. The following table will give a list of the varieties under test:—

Variety.	Date ripe.	Remarks.
Salzer Earliest Ripe	Sept. 15	Heavy crop of large sized fruit.
Improved Watters Solid	" 4	Medium crop, poor flavour.
Earliest of All	" 14	Medium crop, large sized melons.
Earliest Ripe (I. H. Seed)	" 9	Extra yield of large melons.

Onions.—Fifteen varieties were under test. The seed was sown in the garden on April 15 and the crop taken up on September 29. The early part of the season was dry and windy and, consequently, the young plants got a very poor start. The crop obtained was only medium in yield and quality. A test was made of fall versus spring sowing. Seed of Red Wethersfield was sown on October 3, 1914, and again on April 15 following. That sown in the fall came up early and had a good start on the spring-sown seed. The final results, however, were only slightly in favour of fall sowing. Plants started in the hot-house and transplanted in the garden gave slightly heavier yields than seed sown in the open.

The onion maggot, which was troublesome in past years, was not in evidence this season. Consequently, no data were obtained from the work carried on for its control by the use of different poison solutions applied to the roots of the young plants. Below is given a list of the varieties under test.

Variety.	Yield per acre.		Remarks.
	Bush.	Lb.	
Very White Pearl	217	40	Quality very poor.
Johnson Dark Red Beauty	365	..	Quality medium.
Salzer Great Red Wethersfield	387	10	Quality medium.
Red Globe	435	30	Quality medium.
White Globe	411	20	Quality medium.
Yellow Globe	338	40	Quality poor.
Danvers Yellow Globe	290	20	Quality poor.
Large Red Wethersfield	411	20	Quality medium.
Ohio Yellow Globe	411	20	Quality medium.
Rennie XXX Connecticut Yellow Globe	314	30	Quality poor.
Extra Early Red	363	..	Quality medium.
Australian Brown	145	10	Crop and quality poor.
Early Flat Red	290	20	Quality very poor.
White Early Barletta	314	30	Quality poor.
White Queen	338	40	Quality medium.

Garden Peas.—Eighteen varieties were under test. The seed was sown on May 6 and fair yields were obtained. The heaviest yields were obtained from seed grown at Indian Head. The table below will give the date on which the different varieties were ready for use and ripe:—

Variety.	In use.	Ripe.	Remarks.
Dainty Duchess	Aug. 6	Sept. 16	Good crop.
Gradus	July 20	Aug. 20	Medium crop.
Sutton Excelsior	Aug. 6	" 26	Medium crop.
Quite Content	Aug. 12	Sept. 18	Medium crop.
Advancer	" 9	" 8	Good crop.
Gregory Surprise	July 18	Aug. 12	Medium crop.
Early Giant	" 23	Sept. 14	Crop very poor.
Premium Gem	" 24	Aug. 24	Medium crop.
Heroine	Aug. 6	Sept. 14	Good crop.
The Lincoln	" 14	" 14	Good crop.
Juno	" 14	" 18	Medium crop.
Stratagem	" 9	" 17	Medium crop.
Telephone	" 4	" 16	Medium crop.
Thomas Laxton	July 20	Aug. 12	Poor crop.
English Wonder	" 20	" 12	Medium crop.
Senator	" 30	Sept. 10	Medium crop.
Laxtonian	" 24	" 10	Medium crop.
Duke of Albany	Aug. 14	" 6	Medium crop.
Early Giant (I. H. Seed)	July 24	" 10	Medium crop.
Dainty Duchess (I. H. Seed)	Aug. 10	" 14	Extra heavy crop.
The Lincoln (I. H. Seed)	" 14	Aug. 30	Extra heavy crop.

Parsley.—One variety, Double Curled, was under test. The seed was sown in the garden on April 16. The crop was excellent and was ready for use from August 12.

Parsnips.—Two varieties were tested. The seed was sown in the garden on April 16 and the crop taken up on October 8. Intermediate is the most suitable variety for the heavy gumbo soil at this Farm. The roots are shorter than Hollow Crown which makes them easier to dig.

Variety.	Yield Per acre.		Remarks.
	Bush.	Lb.	
Hollow Crown	442	43	Yield medium, quality poor.
Intermediate	493	34	Yield medium, quality good.

Peppers.—Two varieties, Ruby King and Cayenne, were under test. The seed was sown in the hot-house on March 25. Good strong plants were produced but none bore any fruit during the season.

Radish.—Three varieties, Chartier Large, Early Scarlet White Tipped Turnip, and French Breakfast, were under test. All gave a good crop and can be recommended as suitable varieties for this part of the province.

Squash.—Nine varieties were under test. The seed was planted in the garden on June 1 but, owing to summer frosts, the vines were severely checked on several occasions and the crop was not satisfactory. Early White Bush Scalloped, Long White Marrow, and Crookneck were the only sorts that gave any crop.

Salsify.—One variety, Long White, was under test. The seed was sown in the garden April 16, and the roots were ready for use by September 14. The crop was taken up on October 14, and was quite satisfactory.

Turnips.—Eight varieties were under test for table use. The seed was sown on May 8, and the crop was taken up on October 9. Below is given a list of those under test and the yield per acre.

Variety.	Yield Per acre.		Remarks.
	Bush.	Lb.	
Carter Invicta	1040	36	Quality extra good.
Bangholm Swede	629	12	Quality good.
Best of All	605	..	Quality good.
Skirving Purple Top	556	36	Quality good.
Hall Purple Top	536	58	Quality good.
Favorite	520	18	Quality medium.
Sutton Purple Top	508	12	Quality medium.
Westbury Purple Top	435	36	Quality medium.

Tomatoes.—Twelve varieties were under test. The seed was sown in the hothouse on March 18 and plants were set out in the garden on June 7, The vines were severely checked by frost on several occasions during the season. This kept the fruit late and very little ripened on the vines. The crop of green fruit was large and quite satisfactory. The vines which were left unpruned gave a much larger yield than those pruned to several stems. A number of experiments were tried in ripening green fruit. The most satisfactory was found to be where partly coloured tomatoes were placed in an air-tight box and kept in a cool place. The varieties under test are given below.

Variety.	Weight of green fruits from 5 pl.	Remarks.
	Lb.	
Prosperity	14	Medium crop.
Bolgiano Extra Early IXL	23	Good crop.
Florida Special	13	Medium crop.
Rennie XXX Earliest Round Scarlet	19	Good crop.
Line Bred N Adirondack grade No. 1	17	Good crop.
Bonny Best	13	Medium crop.
Johnson Jack Rose	11	Small crop.
Chalk Early Jewel	9	Poor crop.
Sunnybrook Strain Earliana	22	Good crop.
Alacrity	13	Medium crop.
Ponderosa	13	Medium crop.
Yellow Plum	16	Large crop.

Pumpkins.—Three varieties, Large Field, Mammoth and Sweet or Sugar were under test. The seed was sown in the open on June 1. Large Field gave a good crop. The other varieties did not mature.

Rhubarb.—Victoria, Tobolsk, and Strawberry are the varieties under test. All gave a fair yield during the season.

An experiment in forcing roots in the cellar was tried out during the winter. Twelve roots were dug on November 3 and immediately placed in earth in the cellar.

Twelve more roots were also dug on November 3, and allowed to remain outside until frozen solid. These were also placed in the cellar. The first lot gave very poor returns. The second lot that had been allowed to freeze gave a good crop from December 9 until March 1, when roots were removed to make room. Three-year old roots are the best to use for winter forcing.

ORNAMENTAL GARDENING.

TREES, SHRUBS, AND HEDGES.

Trees.—As usual, ornamental trees made a good growth during the season. Insect pests were prevalent on the Experimental Farm, and were also reported from all parts of the province. The larvæ of the fall canker worm defoliated a number of native maple trees in the avenues before being checked by spraying with arsenate of lead diluted with water. Later the trees were again attacked by the green aphis which necessitated spraying all the avenues and hedges with nicotine sulphate diluted with water.

Flowering shrubs were badly checked by late spring frosts, and, with the exception of caraganas and a few late lilacs, no bloom was formed.

Hedges.—There are about thirty specimen hedges on the grounds. These are kept trimmed during the summer in order to show their suitability for ornamental work. Where a low thick hedge is required we recommend the Siberian Pea Tree (*Caragana arborescens*), native choke cherry (*Prunus virginiana*), Manitoba maple (*Acer Negundo* and common lilac (*Syringa vulgaris*). The blue spruce (*Picea pungens*), white spruce (*Picea alba*), and balsam fir (*Abies balsamea*) are suitable for a high, close hedge.

HERBACEOUS PERENNIALS.

Judging from the large correspondence received at this office in regard to horticulture, the residents of the province are giving more attention to beautifying the home surroundings than ever before. Ornamental trees and shrubs are being planted, lawns established, and perennial flowers set out. The latter, once a bed or border is established, require very little further attention and where a proper selection of varieties is made, bloom may be had from May to October.

PERENNIAL FLOWERS.

Variety.	In Bloom.		Remarks.
	From	To	
Aquilegia—S. N. 601	June 10	Aug. 5	Very fine showing.
Aquilegia, Long Spurred White	“ 2	“ 5	“
Aquilegia superba O. S. N. 159	“ 10	“ 5	“
Aquilegia canadensis	“ 8	June 28	“
Aquilegia, Rose Queen, O. S. N. 1038	“ 8	Aug. 6	“
Aconitum, Monks Hood	July 22	“ 26	Good showing of bloom.
Achillea, The Pearl	“ 2	Sept. 20	“ “
Campanula	“ 24	Aug. 30	“ “
Clematis, O. S. N. 145	June 10	July 24	“ “
Campanula latifolia macrantha	July 6	“ 24	“ “
Crocus	April 28	May 12	Fair “ “
Dianthus	July 24	Aug. 30	Good “ “
Delphinium, O. S. N. 79	“ 22	“ 30	“ “
“ Carmen	“ 14	“ 30	“ “
“ Duke of Connaught	“ 14	“ 28	“ “
“ O. S. N. 916	“ 22	Sept. 23	“ “
Dianthus montanus, O. S. 920	June 20	Aug. 28	“ “
“ *glaucus*, O. S. 419	“ 18	“ 4	“ “
“ *Heddewigii*	July 5	Oct. 4	“ “
Dictamnus Fraxinella	June 26	July 20	“ “
“ *albus*	“ 12	“ 16	“ “
Dicentra spectabilis (Bleeding Heart) O. S. 21	May 28	June 24	Medium showing of bloom.
German Iris, Edith	June 24	July 14	Good “ “
“ Rembrandt	“ 8	June 20	“ “
“ Mme Chereau	“ 10	“ 26	“ “
“ Maori King	“ 17	July 4	“ “
“ Shakespeare	“ 20	“ 4	“ “
“ Plicata	“ 24	“ 25	“ “
“ La Tendresse	“ 22	“ 12	“ “
“ Queen of May	July 6	“ 30	“ “
“ Spectabilis	June 10	June 30	“ “
“ Mrs. H. Darwin	“ 24	July 12	“ “
Gypsophila, Chalk plant, O. S. 20	Aug. 5	Sept. 24	Medium showing of bloom.
Gaillardia, O. S. 935	July 18	“ 24	Good showing of bloom.
“ O. S. 936	“ 26	“ 20	“ “
Hemerocallis Dumortierii	“ 30	Aug. 26	“ “
“ *flava*	“ 30	“ 26	“ “
“ *Middendorffii*	“ 10	“ 6	“ “
“ Florham	“ 20	“ 26	“ “
Helianthus, Sunflower	“ 30	Oct. 4	“ “
“ Miss Mellish	Aug. 24	Sept. 28	“ “
“ *Maxmiliani*	“ 16	“ 28	“ “
Lilium elegans	July 4	July 22	“ “
Lychnis, O. S. 931	June 30	Aug. 19	“ “
Lychnis, Scarlet	“ 9	July 15	“ “
Laburnum, O. S. 908	May 30	“ 28	“ “
Perennial Phlox, Von Hochberg	Aug. 16	Sept. 24	“ “
“ Jeanne d'Arc	“ 16	“ 29	“ “
“ R. P. Struthers	“ 16	“ 2	“ “
Paeony, Globosa Grandiflora, O. S. 920	July 9	July 30	“ “
Paeony, Eclatante, O. S. 921	“ 9	“ 30	“ “
“ Victor Lemoine, O. S. 930	“ 5	Aug. 4	“ “
“ Delache, O. S. 933	“ 10	July 30	“ “
Papaver orientale, Goliath	June 26	“ 9	Very fine showing.
“ Royal Scarlet	“ 20	“ 12	“ “
Perennial Geranium, G. *platypetalum*	July 4	“ 28	“ “
“ *G. sanguineum album*	“ 30	Aug. 4	“ “
Platycodon grandiflorum, O. S. 7251	Aug. 4	Sept. 4	Good showing of bloom.
Rudbeckia, *Newmani*	“ 16	“ 20	“ “
“ Rays of Gold	“ 19	“ 24	“ “
“ Golden Glow	“ 14	“ 24	“ “
Symphytum (Comfrey)	July 8	“ 28	“ “
Sweet William	“ 14	Aug. 26	“ “
Siberian Iris, 5 varieties	June 8	July 30	“ “
Trollius, Orange Globe	May 30	June 18	“ “
Thalictrum adiantifolia	July 12	July 22	“ “
Veronica	“ 14	Oct. 4	“ “

ANNUAL FLOWERS

The annual flower beds were well up to the average this past season. Owing to dry weather and summer frosts a number of varieties were checked and did not come into bloom as early as usual but through August and early September the showing was unusually fine.

Asters, which have been affected with rust for the past two summers, were free from disease this season and gave a show of bloom equal to anything that has been had in past seasons.

Sweet peas were late in blooming but eventually gave a magnificent show of bloom which lasted up to October 7, when all flowers were destroyed by frost. The table below gives a list of a number of the best annuals under test this season.

INDIAN HEAD.

Variety.	In bloom.		Remarks.
	From	To	
Asters, 29 varieties	Aug. 2	Sept. 30	Very fine bloom.
Abronia umbellata	July 30	" 16	Good showing.
Alonsoa compacta	Aug. 7	Oct. 8	"
Alyssum, Little Dorrit	July 30	" 14	"
Antirrhinum, 6 varieties	" 24	" 16	"
Arctotis grandis	Aug. 2	Sept. 20	"
Alyssum, sweet, I. H. Seed	July 26	" 30	"
Balsam, Sutton mixed	" 8	" 11	"
Bartonia aurea	" 20	" 11	"
" I. H. Seed	Aug. 4	Oct. 6	Very fine showing.
Browallia Elata, blue	July 20	Sept. 28	Good showing.
Calendula officinalis,	June 30	" 20	"
" Orange King	" 30	" 20	"
Candytuft, Sutton, Improved carmine	Aug. 14	Oct. 14	"
Candytuft, Sutton, White Rocket	July 30	" 6	"
Celosia, Giant Mixed	Aug. 6	Sept. 11	"
Cornflower, Mixed	July 28	" 11	"
Clarkia, International prize	Aug. 5	" 20	"
Cockscomb, Dwarf crimson	July 9	" 11	"
Coreopsis, Mixed	" 7	" 20	"
Cosmos, I. H. Seed	June 30	" 11	"
Candytuft	July 28	Oct. 6	"
Dianthus Heddewigii, single	Aug. 6	" 16	"
Eschscholtzia	" 4	" 6	"
Godetia, Double Crimson	" 24	Sept. 20	"
" Bridesmaid	" 24	" 20	"
" Mixed	" 18	" 20	"
Jacobaea, Double Mixed	" 9	" 26	"
Larkspur, 3 varieties	July 28	" 20	"
Lavatera rosea splendens	Aug. 22	" 20	"
Lobelia	June 30	" 11	"
Lupinus, Annual Mixed	Aug. 16	Oct. 6	"
Larkspur, Annual, I. H. Seed	July 30	Sept. 28	"
Malope, Mixed	Aug. 16	Oct. 4	"
Marigold, Double French	July 28	Sept. 11	"
" Single French	" 4	" 11	"
Mignonette, Sweet scented	Aug. 2	" 20	"
Mimulus, Fine Mixed	July 5	" 11	"
Nasturtium, 9 varieties	June 20	" 11	"
Nemesia, Mixed Colours	July 9	" 6	"
" I. H. Seed	" 9	" 6	"
Nicotiana affinis, hybrids	" 14	" 11	"
Pansy, Brilliant Mixture	June 28	Oct. 19	"
Petunia, Mixed Varieties	July 9	Sept. 20	Very fine showing.
Phlox Drummondii, 6 varieties	June 30	Oct. 6	" "
Portulaca, improved double	July 18	Sept. 11	Good showing of bloom.
Poppy, Shirley	Aug. 4	" 20	" "
Pansy, I. H. Seed	June 28	Oct. 19	" "
Petunia, I. H. Seed	July 5	Sept. 20	" "
Phlox Drummondii, I. H. Seed	June 28	Oct. 6	" "
Rudbeckia	July 20	" 4	" "
Salpiglossis, Large-flowered	" 14	Sept. 28	" "
Salvia, Summer Flowering	" 22	" 11	" "
Schizanthus, large-flowered hybrids	" 6	" 20	" "
Stocks, Perpetual Perfection	" 2	" 16	" "
" Improved Dwarf, 6 varieties	June 29	" 20	" "
Swan River Daisy, Star Blue	July 14	" 28	" "
Sweet Sultan, Mixed	Aug. 4	Oct. 5	" "
" Giant Mixed	" 4	" 5	" "
Tagetes signata pumila	July 5	Sept. 14	" "
Verbena, Mixed	" 12	" 20	"
Viscaria cardinalis	Aug. 18	" 20	" "
Zinnia, Giant Double mixed	June 30	" 11	" "
" Sutton Fireball	" 30	" 11	" "

Indian Head.

EXPERIMENTAL STATION, ROSTHERN, SASK.

REPORT OF THE SUPERINTENDENT, WM. A. MUNRO. B.A., B.S.A.

WEATHER CONDITIONS, CROP NOTES, AND METEOROLOGICAL RECORDS.

The winter of 1914-15 was comparatively mild and scarcely more snow fell than sufficient to make good sleighing. As a consequence there was little spring flood and little time between the departure of snow and spring tillage.

The hotbeds were started early in April and the ground was in shape in the open about the middle of April. A good start was made in all the annual vegetables and flowers and little interruption was met with due to bad weather. After the opening of spring very little rain fell, the total rainfall for the growing season being the lowest in five years. On June 12 the temperature went down to 24° F., which killed the tomatoes and vine plants, injured a large number of blossoms of the small fruits, cut off the potatoes, and killed the corn. On August 25 the temperature went down again to 31° F., which froze the corn and potatoes again. As a consequence of the exceptionally dry season and of the unusually late spring and early autumn frosts the results in horticulture were less satisfactory in 1915 than for any previous year. The beans, corn, cucumbers, melons, squash, and pumpkins gave no yield and the results tabulated in tomatoes are from plants that were planted in the open after June frosts.

Following is the meteorological record for the year:—

WEATHER Observations taken at Rosthern Experimental Station, 1915.

Month.	Temperature F.			Total Precipitation.	Total Sunshine.
	Highest.	Lowest.	Mean.		
	Degree.	Degree.	Degree.	Inch.	Hour.
January	30·3	−45·5	0·2	0·60	103·6
February	29·0	−13·3	8·8	0·50	134·7
March	43·0	−14·8	17·7	1·00	190·6
April	71·3	13·7	44·6	0·30	242·1
May	78·8	23·4	51·2	1·15	297·8
June	81·0	24·2	54·7	1·00	219·9
July	84·2	35·8	58·5	3·12	246·0
August	93·6	31·2	64·2	0·28	319·4
September	79·1	11·8	46·2	1·07	107·8
October	67·1	19·4	40·0	0·32	171·7
November	47·5	−16·6	18·7	0·95	119·9
December	28·0	−20·5	6·8	0·82	83·2
Total	....		..	10·11	2,236·7
Average for years 1911, 12, 13, 14	....		..	16·24	2,201·4
Total for five growing months April to August, 1915	....		.....	5·85	1,323·2
Average for five growing months, 1911, 12, 13, 14	....	....	.....	10·62	1,269·9

PRECIPITATION for the past five growing seasons, April 1 to August 15.

Month.	Year.					Average 5 years. 1911–15.
	1911	1912.	1913.	1914.	1915.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
April	0·86	0·67	0·26	0·63	0·30	0·54
May	2·38	2·15	1·26	1·96	1·15	1·78
June	3·55	2·81	1·87	2·00	1·00	2·25
July	2·89	5·25	3·80	1·40	3·12	3·29
August	0·43	0·23	2·24	0·13	·02	0·26
Total	10·11	11·11	9·43	6·12	5·59	8·49

VEGETABLES.

Potatoes.—Owing to the combined effects of late and early frosts and to the continued dry weather the yields of potatoes at this Station in 1915 were the lowest of any year since the Station was established in 1909.

Twenty varieties of potatoes were under test this season but the order of yield was very different from what it had been for the previous five years. These were planted May 6, frozen to the ground on June 15 when they were about six inches high, and frozen again on August 24, when the leaves were destroyed, and frozen to the ground on September 11. This left a growing season of ten weeks as compared with one of fifteen weeks in an average year.

Early Ohio was second highest this year and Bovee was seventh. The only other two seasons they were tried they were nearly the lowest. Following is the yield for 1915 and the average yield for five years of those varieties that have been under test during that period. The yields by acre are estimated from the crop obtained from five rows two and one half feet apart and 78 feet long, of each variety.

Variety.	Colour.	Yield 1915 per acre.	Average for 5 yrs. per acre.
		Bush.	Bush.
Everett	Pink	275	498
Early Ohio	"	265	....
Reeves Rose	"	259	435
Rochester Rose	"	252	491
Vick Extra Early	Pink and White.	251	428
Moneymaker	White	245	488
Bovee	Pink	240	....
Irish Cobbler	White	232	370
Rawlings Kidney	"	227	496
Dreer Standard	"	219	512
Empire State	"	215	437
Late Puritan	"	213	438
Dalmeny Beauty	"	210	426
Vermont Gold Coin	"	205	....
Bermuda Early	Pink	195	....
Carman No. 1	White	195	386
Wee MacGregor	"	195	....
Canadian Standard	"	193	....
Burbank Seedling	Pink	186	....
Table Talk	White	161	....

ROSTHERN.

Three plots of Wee MacGregor were given different kinds of cultivation with the following results:—

Three cultivations: July 2, 9, and 16. Left level	261 bush. per acre.
Five cultivations: July 2, 9, 16, 23, and 30. Left level.	288 " "
Four cultivations: July 2, 9, 16, and 23, and hilled July 30	254 " "

The average yield of hilled versus unhilled for the four previous years was:—

Hilled	414 bush. per acre.
Unhilled	437 " "

Morgan Seedling potatoes were planted at different dates with the following results:—

May 7	271 bush. per acre.
" 15	233 " "
" 23	235 " "
June 18	131 " "

Different depths of seeding have been tried for the past four years with the following results:—

Depth.	Bushels per acre.			
	1912.	1913.	1914.	1915.
2 inches deep	465	531	391	270
4 "	659	540	297	288
6 "	775	526	276	291
4 " and subsoiled	789	....	....	281

Potatoes have been planted at different distances apart with the following results for the past four years:—

—	Bushels per acre.			
	1912.	1913.	1914.	1915.
12 inches between plants, and 30 inches between rows	557	505	271	287
14 " " 33 " "	609	528	242	273
15 " " 36 " "	570	394	242	223

Beets.—Six varieties of table beets were sown on May 3 and harvested on September 14 with the following results from a row 30 feet long:—

Variety.	Lb.	oz.
Ruby Dulcet	68	4
Cardinal Globe	88	4
Eclipse	51	4
New Meteor	68	8
New Early Black Red Ball	52	4
Crosby Egyptian	79	4

Rosthern.

Carrots.—Four varieties of carrots were tested. Half Long Chantenay along with being the highest yielder was one of the best in point of quality. These were sown on May 4, thinned toward the end of June, and ready for use by the end of July. Following is the yield from a 30-foot row:—

Variety.	Lb.	oz.
Improved Nantes..	47	8
Half Long Chantenay..	55	10
Early Scarlet Horn..	31	15
Improved Danvers Half Long..	49	12

Turnips.—Eight varieties of turnips were tested for the table, but swedes proved to be more desirable for culinary purposes than the white turnips, especially so when keeping qualities are considered. These were sown on May 5 and ready for use early in August. Following is the yield from a 30-foot row:—

Variety.	Lb.	oz.
Westbury Purple Top..	26	9
Best of All..	23	3
Hall Purple Top..	30	3
Bangholm Purple Top..	27	4
Favorite..	20	13
Carter Invicta..	46	11
Sutton Purple Top..	24	8
Skirving Purple Top..	28	15

Cauliflower.—The varieties tested in cauliflower in 1915 were not satisfactory where yield alone is considered, because the early varieties were ready to mature when the season was the driest and instead of maturing, withered. Any of the four following varieties are satisfactory under general conditions. The yields are from one row 30 feet in length of each:—

Variety.	Lb.
Early Snowball..	22
Extra Selected Early Dwarf Erfurt..	14
Danish Giant Dry Weather..	4
Veitch Autumn Giant..	1

Some varieties of cauliflower were sown in the open, but were affected with root maggot and those that survived this trouble succumbed to the dry weather.

Cabbage.—Cabbage has done well ever since the Station was established, although the yield in dry seasons is not equal to that in normal seasons. The plants were started in the hotbed at the end of March and planted in the open on the 17th of May and were ready for use from the middle to the end of July. Following is the list of the varieties tested with the weight of ten average heads:—

Variety.	Lb.	oz.
Nofalt..	71	6
Early Jersey Wakefield..	38	0
Paris Market (very early)..	24	4
Copenhagen Market..	64	13
Danish Summer Ballhead..	43	14
Flat Swedish..	51	10
Extra Amager Danish Roundhead..	59	6
Improved Amager Danish Roundhead..	40	6
Fottler Improved Brunswick..	42	13

Celery.—Seven varieties were tested. This is one of the most difficult vegetables to start, the seed being small and slow to germinate. In this case the seed was sown in pots in the house and on the 1st of April when the hotbed was ready they were plunged in the hotbed. They were transplanted from the pots to the hotbed on the 22nd of May and planted in the open on the 21st June. Following is the weight of plants from a fifteen foot row of each variety:—

Variety.	Lb.	oz.
Paris Golden Yellow	32	10
Giant Pascal	36	3
White Plume	17	8
Evans Triumph	29	10
Noll Magnificent	40	2
French Success	28	2
Improved White Plume	27	9

We have tried planting celery in trenches and on the level and in every case found more satisfactory results from planting on the level. In both cases there was a deep, rich seed-bed.

Several methods were tried in the bleaching of celery namely: with earth, boards, and felt roofing. Banking with earth involved the most labour. Banking with boards and felt roofing involved about the same amount of labour, but the boards were more easily kept up close to the plants. The roofing, however, is inexpensive, easy to store, and with the use of long wires in the form of staples, could be made to stand up close to the plants. The roofing is sold in rolls 12 inches wide.

Onions.—Thirteen varieties of onions were sown in the open on the 5th of May, germinated on the 22nd, were thinned on June 14, and ready for use by the 15th of September. Following is the table showing the names of varieties, weight in a 30-foot row, of the good onions, and of the thick-necks:—

Variety.	Good Onions. Lb.	oz.	Thick-necks. Lb.	oz.
Johnson Dark Red Beauty	5	13	3	2
Salzer Great Red Wethersfield	8	13	2	11
Red Globe	4	8	7	6
White Globe	8	11	5	6
Danver Yellow Globe	7	15	5	7
Large Red Wethersfield	9	12	3	8
Australian Brown	6	10	0	9
Early Flat Red	9	6	2	10
White Early Barletta	9	13	1	9
White Queen	7	10	0	0
Very White Pearl	9	1	0	7
Rennie Extra Early Red	8	2	1	10

An experiment was tried in thinning onions. In all cases the rows were 33½ feet long. Following is the table showing the results:—

Variety.		Marketable. Lb.	oz.	Thick-necks. Lb.	oz.
Extra Early Red.	Thinned 1-in. apart	12	12	0	8
	" 2-in. "	5	7	1	4
	" 3-in. "	2	4	2	5

Tomatoes.—Five methods of ripening tomatoes were tried as follows: placing the green fruit in a window in the sun; placing it in the shade; placing it in a closed box; placing it in a pile covered with straw; hanging the plants in a cellar. It was found that where the tomatoes were nearly ripe, those did best that hung on the plants in the cellar, but where the tomatoes were quite green best results were obtained by placing in a closed box, or placed in a pile covered with straw. Tomatoes ripened on the plants retain their flavour better than those ripened off the plants.

ROSTHERN.

ORNAMENTAL PLANTS.

ANNUAL.

Asters.—The asters for this experiment were transplanted at the same time as those in the open and were mulched with light manure to a depth of 2 inches. A wooden frame with cheesecloth top was erected over them.

There was very little withering or yellowing evident on any of the asters this year (1915) but those under the shade frame were entirely free from it.

Among the best varieties of asters are to be mentioned: Sutton Victoria Mixed, Sutton Primrose Queen, Sutton Giant French Mixed, Ray Asters, Sutton Giant White. They began to bloom about the middle of August and continued until cut off by frost.

Upwards of two hundred varieties of flowers were tried in the border which bounds the lawn, the more important of which are tabulated as follows:—

Kind.	Where sown.	Date sown.	Time of transplanting.	Flowering period.
Bartonia aurea	Open	May 6		July 7—Sept. 10.
Calendula	Open	May 6		July 18—Sept. 10.
Candytuft	Open	May 6		Aug. 20—Sept. 10.
Carnation	Hotbed	April 4	June 8	Aug. 28—Sept. 10.
Cornflower	Open	May 16		July 20—Aug. 25.
Chrysanthemum, annual	Hotbed	April 3	June 10	June 15—Sept. 9
Clarkia	Open	May 6		July 12—Sept. 12.
Coreopsis	Hotbed	April 3	June 10	July 13—Sept. 10.
Cosmea	Hotbed	April 3	June 10	July 7—Aug. 30.
Daisy, Sutton double mixed	Hotbed	April 5	June 11	July 17—Sept. 10.
Dianthus	Hotbed	April 5	June 11	July 2—Sept. 5.
Eschscholtzia	Open	May 5		July 17—Aug. 23.
Gaillardia	Hotbed	April 8	June 10	July 10—Sept. 10.
Godetia	Open	May 5		July 28—Aug. 25.
Kochia (Summer Cypress)	Hotbed	April 3	June 8	Aug. 8—Aug. 30.
Larkspur	Open	May 5		Aug. 8—Sept. 10.
Lobelia	Hotbed	April 4	June 8	July 15—Sept. 10.
Marigold	Hotbed	April 3	June 10	July 4—Sept. 10.
Mignonette	Open	May 5		June 15—Aug. 28.
Nasturtium	Open	May 6		Aug. 10—Sept. 10.
Nemesia strumosa Suttoni	Hotbed	April 3	June 11	July 15—Sept. 10.
Nicotiana	Hotbed	April 5	June 9	July 12—Aug. 30.
Pansy	Hotbed	April 5	June 7	July 10—Sept. 10.
Petunia	Hotbed	April 5	June 9	July 12—Sept. 10.
Phlox Drummondii	Hotbed	April 3	June 9	July 2—Sept. 10.
Portulaca	Hotbed	April 5	June 12	July 20—Sept. 10.
Shirley Poppy	Open	May 6		July 20—Aug. 30.
Double Carnation Poppy	Open	May 6		July 28—Aug. 30.
Salpiglossis	Hotbed	April 3	June 9	July 20—Sept. 10.
Stock	Hotbed	April 3	June 9	July 4—Sept. 10.
Sweet Sultan	Open	May 6		July 24—Sept. 10.
Verbena	Hotbed	April 3	June 9	July 7—Sept. 10.

We have collections of sweet peas which were obtained from Sydenham, and Burpee. These were sown on May 6, began to bloom early in August, and continued until the first hard frost on September 10.

Home grown flower seeds.—The seed has been saved from the following list of flowering annuals from 1914, and proved quite as satisfactory as that obtained from the seed houses: Fourteen varieties of antirrhinum, chrysanthemum, cosmea, schinzanthus, verbena, three varieties of coreopsis, four varieties of stock.

Tulips.—Every year there is received from Holland a shipment of several thousand tulip bulbs, most of which are planted in the border immediately, which is usually

September or October. These are watered and covered with straw and left until spring. They furnish a magnificent display of early bloom and die off in time to allow for asters and geraniums to be planted for later bloom the same season. The same bed of tulips does well for two years and in some cases three years.

Besides the tulips planted out of doors, several hundred are potted and stored in the cellar. They are kept in the dark and watered as often as they show considerable dryness. As the cellar here is rather dry the tulips are watered about every three weeks. About the time of the Christmas holidays, a few of the more forward plants are removed to a shaded place in the house, watered and left for a few days and then removed to more light and watered, and in the course of a couple of weeks open into flower. Before these have done blooming, others are brought and so a succession of flowering tulips is kept up until Easter.

TREES AND SHRUBS.

Starting a Hedge or Windbreak.—Many more applications are made to the Station for a start in young trees and shrubs than the Station can supply. Nearly every application is for a tree or shrub to set out. If it could be realized how much more easily and quickly a tree can be started from a seed or a cutting than young trees from two to four feet high, there is no doubt that the applications would be for seeds and cuttings rather than for trees.

In 1912 it was decided to start a caragana hedge quickly, and in order to hasten matters two-year old plants were obtained in good condition from the Experimental Station at Lacombe, and at the same time we planted caragana seed in a nursery row. At the end of the season of 1913 the plants in the nursery row were as tall as those in the hedge, and at the end of the season of 1914, which indicated three seasons' growth in every case, those planted from the seed in 1912 and left in their original places were all taller than those two year old plants planted at the same time, and they showed a great deal more foliage, and were in every way more desirable plants. The same results have been shown repeatedly in the case of Manitoba maple, and also in Russian poplar. If Russian poplar cuttings are placed where the tree is wanted to grow the resulting tree will be larger at the end of the season than will a two year old tree transplanted at the same time the cutting was planted. Besides the actual advantage of quicker growth and stronger tree, there is the added advantage of saving of expense by shipping sets of cuttings, and the saving of labour in planting the seeds or the cuttings instead of planting the trees.

For shade trees there is perhaps no quicker growing trees for the purpose than a number of varieties of Russian poplar. This species is propagated very easily by means of cuttings and frequently makes over three feet of growth in a single season. For a windbreak any of the number of varieties of willow propagated by means of cuttings is satisfactory as well as the Manitoba maple propagated by means of seeds.

For hedges, the caragana propagated by seed, and the laurel-leaved willow propagated by cuttings, are, perhaps, the most satisfactory.

Of the ornamental shrubs the most easily cared for are the Tartarian honeysuckle, *Rosa rugosa,* and many of the large number of varieties of lilac. All of these are slow to propagate and young plants may be had from any of the well recommended nurseries and occasionally from the Experimental Stations.

Native spruce and larch were obtained in their natural location north of Duck lake in the seasons of 1911-12-13. These plants were of heights varying from 1 to 6 feet, and out of nearly three hundred trees less than ten died. In transplanting the spruce very special care was exercised to prevent the roots becoming dried. On the wagon bottom was placed moss to a depth of about 4 inches which was thoroughly soaked with water. As much earth was left with the young tree as the root would carry, and the trees were placed in the wagon as soon as lifted. Frequently during the process of loading, water was poured on the trees, and again on the way home wherever opportunity afforded, water was again applied to the roots. The next day holes were dug larger than necessary to merely hold the roots and water was poured in. A tree was lifted from the wagon and placed in the hole to such a depth that when the ground was placed around the tree, the tree was about two inches farther into the ground than it had been in its original environment. The ground was tramped very tightly around the tree and water was poured on again. Several times during the first season the trees were again watered.

The Arboretum.—Upwards of seven hundred trees and shrubs were planted in a border on the north and west sides of the horticultural ground and careful record is being kept of their growth and relative merits. Planting was begun in 1910 and new specimens are being added every year.

SMALL FRUITS.

With the exception of gooseberries, the yield of small fruits in 1915 was smaller than in any previous year. This was principally due to the dry weather. The drought was not felt directly so much as indirectly on the plants because of the conditions thus made favourable for the development of noxious insects and particularly of aphids on the currant bushes. Although spraying was carried on the results were not satisfactory owing to the immense numbers of these small insects.

Although gooseberries have been tried every year since the establishment of the Station, this was the first season that a yield was obtained, which, although in itself not large, establishes a record. Of course the plants are very small. Six bushes of Carrie yielded five standard berry boxes of fruit. Six bushes of Houghton yielded twenty-six standard berry boxes.

The following is a table showing the principal varieties of black, red, and white currants, and raspberries together with their yields in 1915. The yields are given in terms of standard berry boxes holding approximately one pint.

Small Fruits.

Variety.	Year planted.	No. of plants.	Total yield.	Yield per plant.
Black Currants.			Boxes.	Boxes.
Clipper	1911	6	13	2
Victoria Black	1911	6	20	3⅓
Eagle	1911	6	32	5⅓
Topsy	1911	6	21	3½
Lee Prolific	1911	6	30	6
Red Currants.				
Red Grape	1911	5	15	3
Rankins Red	1911	6	20	3⅓
Raby Castle	1911	6	46½	7½
Stewart	1911	6	25	4⅙
White Currants.				
White Cherry	1911	6	18	3
Raspberries.				
Turner	1911	12	28	2⅓
Loudon	1911	12	32	2⅔
Sunbeam	1911	12	38	3
Herbert	1912	4	9	4¼

Strawberries.—Proper winter protection seems to be the limiting factor in strawberry culture. The plan followed at Rosthern is to cover with loose straw to a depth of nearly a foot. The straw is held in place by means of poles laid directly above the rows of strawberries.

Rosthern.

In the first three seasons of our experience we uncovered the strawberries early in spring and the plants grew splendidly, but bore no fruit. During the last three seasons the mulch has been left on until the end of May with the result that there has been fruit every season. In some places where the mulch was thicker than it should have been the plants smothered. The critical time in the development of the fruit is at the blossom stage. A very slight frost kills the bud or blossom and if the mulch is left on until the danger from frost is over, the blossoms develop without injury and fruit is the result. Owing to the severe frost on June 12, many of the buds were killed, but sufficient survived to produce a fair crop.

The three varieties that have done best at Rosthern are the Dakota, Warfield, and Senator Dunlap.

TREE FRUITS.

Apples.—The seedling apples started from Manitoba grown apples and from seed grown at Ottawa came through the winter of 1914-15 in good condition and made satisfactory growth throughout the season. There are upwards of five thousand of these trees and from these we hope to be able to select an apple suitable to this climate.

Many of the apple trees that have been planted for three, four, and five years came into luxuriant bloom, but the bloom was killed by the June frost and no fruit was produced.

Plums.—The same frost that played havoc with the strawberry and apple blossoms killed nearly all of the plum blossoms. The seedling plums secured from Brandon two years ago are making good progress.

EXPERIMENTAL STATION, SCOTT, SASK.

REPORT OF THE ACTING SUPERINTENDENT, MILTON J. TINLINE, B.S.A.

CHARACTER OF SEASON.

The first part of April was cool and cloudy, the latter part much warmer. Strong winds did considerable damage to the fruit and vegetable gardens during the last few days of the month.

May was cool and unsettled, with high winds. By the third week in May, a number of young apple and plum trees were in bloom. The red currant bushes were also a mass of bloom at that time.

Sharp frosts, as late as June 16, damaged beans, potatoes, corn, tomatoes, etc. Rain was recorded on seventeen days, with a total precipitation of 3·74 inches. Early in the month the flowering shrubs were blooming freely. Annual flower seeds, sown in the open, germinated well.

The coolness of the nights was particularly noticeable during both June and July. This retarded the development of some of the more tender kinds of vegetables. Very little precipitation was recorded after July 16.

August was much warmer, with very little rainfall. An excellent crop of small fruits was harvested, while, notwithstanding the dry weather, annual flowers bloomed freely. One degree of frost was recorded on the 23rd, but did very little injury.

The frosts from the 9th to the 14th of September, were unusually severe. The more tender kinds of vegetables were harvested early in the month, but the frost injured vegetables that are usually considered quite hardy, such as beets, onions, etc.

With the exception of a snowstorm on the 6th fine weather was experienced throughout October.

The ground froze up on November 8, and snow fell on the 9th. For the most part the weather during November and December was reasonably mild.

Commencing with January 3, severe winter weather set in; the minimum temperature on the 11th being 55·4° below zero. The cold and stormy weather continued up to the middle of February. The average mean temperature for January being 18·1°. A thaw from the 14th to the 25th of February made a break in a cold winter. From the latter date to almost the end of March the weather continued cold. Somewhat warmer weather was experienced during the last few days of March.

EXHIBITIONS.

An important feature of the exhibit sent out from this Station to the summer fairs, was a collection of small fruits; currants, raspberries, gooseberries, and strawberries which attracted considerable attention. A display of perennial flowers called forth many favourable comments. The fruit and flowers were supplied fresh for each fair, and added greatly to the general effect. As the exhibit was staged at seven central fairs in comparatively new districts, it is hoped that the interest aroused will lead to the addition of fruit and flower gardens to a number of the farm and village homes.

TREE FRUITS.

Experimental work with tree fruits has consisted in testing out varieties of hardy standard apples, seedlings of standard apples, hybrid crab-apples, plums, and cherries. The orchards were first started in 1911, and, as the fruit trees had to be shipped in, they were necessarily only two or three years old when planted. During the past season Robin, Magnus, and Silvia (three varieties of hybrid crab-apples) bore fruit for the first time. Aitkin, Cheney, and native plums bloomed quite freely, but, owing to the strong winds prevailing at flowering time, no fruit set. Several Compass cherries bloomed, and a small quantity of fruit ripened on a Rocky Mountain cherry.

A factor that has contributed to the success obtained with the fruit trees, is the system of caragana hedges planted at the same time the first fruit trees were set out.

While hedges were planted around the outside of both of the orchards, cross-hedges were only planted in one. These cross-hedges run east and west, and are 40 feet apart. Every 20 feet a space was left in the hedges for the fruit trees. Paralleling the cross-hedges and half-way between each pair of hedges, fruit trees were planted 20 feet apart in the row.

The hedges are left untrimmed so as to provide as much protection as possible from the winds, also to hold the snow for winter protection. The moisture obtained from the melted snow, is an important item in the moisture supply for the early summer months.

Considerable loss was sustained by the trees not ripening their wood before the autumn frosts, and freezing back each winter. To overcome this difficulty, rape is sown during the latter part of July. The rank growing rape taking the excessive moisture out of the ground, permits the trees to ripen before the severe weather.

BUSH FRUITS.

The bush fruit garden is protected by caragana hedges. These aid materially by affording protection from the wind, and in holding the snow during the winter.

Thirty varieties of currants are under test; of these, almost all the black varieties and about fifty per cent of the red, have proved hardy. White currants freeze back to a greater or less extent, while winter protection is given the raspberries and gooseberries.

The following is a list of the most productive of the hardiest varieties of currants and raspberries under test:—

Variety.	Bushes.	Size of Fruit.	Yield per acre 1915.
Red Currants—			Lb.
North Star	Large, vigorous	Very small	4,818
Raby Castle	Vigorous	Medium	4,519
Stewart	Vigorous	Small	4,007
Red Cross	Vigorous	Very large	3,375
Black Currants—			
Kerry	Large, vigorous	Small	10,672
Climax	Large, vigorous	Small	10,236
Saunders	Large, vigorous	Small	9,266
Magnus	Large, vigorous	Large	7,623
White Currants—			
White Cherry	Weak	Medium	490
White Grape	Weak	Medium	272
Large White	Weak	Small	217
Raspberries—			
Sunbeam	Large, vigorous	Small	1,905
King	Small, vigorous	Small	1,502

Scott.

Dry warm weather was experienced during the fruiting season of the raspberries; this decreased the yields materially. Four varieties of red raspberries were grown; of these, only the two varieties Sunbeam and King, were grown under comparable conditions. The former is a cross between the native raspberry of South Dakota and a purple cane Eastern berry. It is very hardy, a vigorous grower, and a prolific bearer. The fruit is of medium quality. This variety is recommended for prairie conditions.

The Herbert, if well protected during the winter, will produce satisfactory crops of superior fruit.

The Houghton has proved to be the only satisfactory variety of gooseberries grown on the Station.

Covering raspberry canes and gooseberry bushes with soil has been found the most satisfactory winter protection. Plants not protected usually freeze back very badly.

STRAWBERRIES.

Notwithstanding the June frosts, an unusually heavy crop of strawberries was harvested. Reports received, indicated good crops wherever they were tested throughout northwestern Saskatchewan.

The only varieties on the Station, were Dakota, and a mixed bed of Senator Dunlap and Warfield. The fruit of the Dakota is small and somewhat hard when preserved. The Warfield has a larger and softer berry, while the Senator Dunlap is much to be preferred to either of the others.

New plantations of Dakotas and Senator Dunlaps were set out. The latter were planted in the early spring, and produced vigorous runners. The Dakota, planted late in June, made satisfactory growth.

VEGETABLES.

EXPERIMENTS WITH POTATOES.

The field, on which the tests with potatoes was conducted, was a dark chocolate loam, and had grown field roots and potatoes in 1914. Ten tons per acre of well rotted barnyard manure was applied early in the spring, the land was then ploughed 8 inches deep, packed, floated, and harrowed. The potatoes were planted with the plough, and the soil again packed and harrowed.

POTATOES—TEST OF VARIETIES.

Of the thirty varieties under test, the nineteen given in the following table have been under test for four years:—

Variety.	Size, form and colour.	Yield per acre 1915.		Average Yield per acre 4 years.	
		Bush.	Lb.	Bush.	Lb.
Rawlings Kidney	Large, oval, white	347	36	300	26
Morgan Seedling	“ “ “	281	36	294	10
Wee MacGregor	“ “ “	343	12	292	9
Table Talk	“ “ “	312	24	273	37
Carman No. 1	“ “ “	329	48	267	18
Dreer Standard	“ “ “	312	24	264	43
Gold Coin	“ “ “	301	24	264	2
Money Maker	Large, long, white	299	12	256	30
Rochester Rose	Medium, round, pink	273	12	251	39
Dalmeny Beauty	Large, oval, white	341	..	249	21
Empire State	Large, long, white	314	36	243	27
Irish Cobbler	Medium, round, white	276	48	228	28
Everett	Medium, long, pink	255	12	225	26
Late Puritan	Large, long, white	277	12	223	15
Vick Extra Early	Medium, long, pink	257	26	196	56
Reeves Rose	Medium, oval, pink	291	30	189	28
Hard to Beat	Small, oval, white	180	24	154	59
Factor	Medium, oval, white	272	48	154	34
American Wonder	Small, round, white	118	48	105	48

Owing to the dry weather of the latter part of the summer and to the short growing season some of the late maturing varieties did not yield as well as might be expected. In the cooking test the Everett, and Wee MacGregor proved to be two of the best varieties.

CULTURAL EXPERIMENTS WITH POTATOES

Potatoes were planted at week intervals from May 7, to June 4. The rows were 2½ feet apart. The sets cut to three eyes each, were dropped 1 foot apart in the row.

POTATOES.—Dates of Planting.

Date of Planting.	Total Yield per acre.	
	Bush.	Lb.
May 7	528	.
“ 14	360	48
“ 21	321	12
“ 28	272	48
June 4	255	..

It will be noted that, notwithstanding the June frosts, the earliest planting gave the best yield.

SCOTT.

KIND OF SETS.

In this experiment two types of potatoes were used, one having most of the eyes at the seed end of the tuber, and the other with the eyes more evenly distributed. The following table gives the average of the results obtained:—

POTATOES.—Kind of Sets.

Kind of Sets.	Unmarketable per acre.		Total Yield per acre.	
	Bush.	Lb.	Bush.	Lb
Whole, small potato	24	12	315	42
Cut to one eye	13	12	275	..
Cut to two eyes	17	36	286	..
Cut to three eyes	16	30	324	30

DISTANCES APART IN PLANTING SETS.

In this test both 30 and 36 inches between the rows were tested, also planting the sets 12 and 14 inches apart in the row. The rows that were 36 inches apart, with the sets 24 inches apart, gave the better crop.

HILLING VERSUS LEVEL CULTIVATION.

Hilling potatoes in July was found to increase the yield per acre by 35 bushels, fewer tubers were sunburned, and less damage was occasioned by the early September frosts.

STRAW MULCH.

A straw mulch was placed between the rows of potatoes when the tops were 4 inches high. This plan eliminates the expense of cultivation. A loss of 47 bushels per acre was realised by using the mulch. The crop was badly attacked by common scab, which rendered the tubers useless for seed purposes. On the adjoining plot very little scab was noticed.

COST OF GROWING 1 ACRE PLOT OF POTATOES.

A 1-acre field was planted with potatoes, half with the Gold Coin, and half with the Everett. The seed was planted on May 13, in rows 2½ feet apart, the sets cut to 3 eyes each were dropped 12 inches apart in the row. The field had been manured early in the spring, and ploughed 8 inches deep. It was then packed and harrowed. A plough was used to make and cover the drills. In harvesting, the rows were opened up with one horse on the plough.

The following table gives the total cost of producing the one acre of potatoes:—

Rent of land (one year)	$ 3 00
Barnyard manure (12 tons) at $1 per ton (⅓ exhausted in one year)	4 00
Ploughing in early spring (10 hours at 33 cents per hour)	3 30
Packing (⅔ hour at 33 cents per hour)	22
Harrowing twice (1 hour at 33 cents)	33
Making and covering drills (9 hours at 33 cents per hour)	2 97
Seed (25 bushels at 50 cents per bushel)	12 50
Cutting and planting sets (4 men, 9 hours at 19 cents per hour)	6 84
Harrowing and packing after planting (1 hour at 33 cents)	33
Harrowing twice later (⅘ hour at 33 cents per hour)	26
Cultivating three times and hilling (9 hours at 26 cents per hour)	2 34
Ploughing out (1 man and horse, 6 hours at 26 cents per hour)	1 56
Picking up (manual labour, 56 hours at 19 cents per hour)	10 64
Storing (2 men and team, 5 hours at 53 cents per hour)	2 65
Total cost	$50 94

Yield per acre Gold Coin, 227 bushels.
" " Everett, 197 bushels.

SCOTT.

OTHER KINDS OF VEGETABLES.

BEANS.

The young bean plants were frosted on July 16, making reseeding necessary. Before the frosts of early September seven varieties were sufficiently advanced for table use. The Wardwell Kidney Wax proved to be the most tender, and to have the best flavour.

BEETS.

Only a medium crop of beets was harvested. Six varieties were grown, the Ruby Dulcet leading in point of yield, with Eclipse second, and Crosby Egyptian third.

CABBAGE.

Ten varieties of cabbage were grown; of these, Nofalt gave the best crop, with Copenhagen Market second. Early Jersey Wakefield, and Paris Market were the first fit for use. Danish Delicatesse gave the heaviest yield of the red varieties.

CAULIFLOWER.

The Danish Giant Dryweather gave 94 per cent of good heads, with an average weight of 3½ pounds per head. The Early Snowball weighed equally well, but only 75 per cent of the heads developed properly.

CARROTS.

Of the four varieties of carrots tested, Half Long Chantenay, and Early Scarlet Horn yielded equally well. In the cooking test Improved Danvers Half Long surpassed all others, having an unusually sweet flavour.

In the cultural test, to determine the best distance apart to grow carrots, it was found that thinning the plants to 1½ inches apart in the row gave heavier yields than wider spacing. The roots from wider distances were more shapely however.

CORN.

Owing to the cool weather of the early summer months, and to the early September frosts, only the following three varieties of corn reached the roasting stage, White Squaw, Extra Early Adams, and Malakoff.

LETTUCE.

The cool, moist weather of the early summer was particularly favourable to lettuce, the several varieties tested continuing fresh and crisp for a lengthy season. Giant Crystal Head was one of the best varieties for table use, being crisp and tender, and of excellent flavour. Hanson Improved was also of good quality.

ONIONS.

The test with onions included thirteen varieties. Owing to the unusually severe frosts in early September, some of the late maturing varieties did not yield as well as was expected. Red Globe gave the heaviest crop, with Dark Red Beauty second. Out of three varieties of pickling onions tested, White Early Barletta yielded the best crop. Extra Early Red had the lowest percentage of thick-necks, with large Red Wethersfield having the highest.

SCOTT.

PARSNIPS.

Two varieties were tested, Intermediate giving the better yield, but Hollow Crown proved the better in the cooking test. In determining the proper distances apart for parsnips, 3 inches was found to produce the heaviest crops.

RADISH.

An excellent crop of Scarlet White Tipped radish was secured, the radish being unusually crisp, and mild in flavour.

TURNIPS.

In addition to the usual test of white turnips, several varieties of swedes were grown for table use. While some were almost as fibrous and strong flavoured as the white kinds, yet Champion Purple Top proved to be mild and sweet in flavour, and of medium texture. Hall Purple Top was second in suitability for table use.

PEAS.

Sixteen varieties of garden peas were grown in the uniform test rows. Additional experiments included testing home-grown seed against imported seed, and testing out sowing four varieties, having different seasons of maturing, against sowing one variety on successsive dates. The object of the latter experiment was to provide a lengthy season for green peas. (Sowing different varieties early in the season, proved the more satisfactory.)

In the variety tests, the seed was sown in rows 2½ feet apart, on April 29. The following table gives the date when the peas were first ready for use, the quantity of green peas harvested in the pod, and the yield of ripened seed secured:

GARDEN PEAS.—Test of Varieties.

Variety.	First Ready for use.	Yield, Green Peas in Pod. 15-foot row	Yield, Threshed Peas. 15-foot row.
		Lb.	Lb.
Advancer	July 30	14½	2¾
American Wonder	" 17	12½	1⅞
English Wonder	" 17	11⅞	2½
Sutton Excelsior	" 25	11½	1¾
Juno	Aug. 5	11½	2⅜
Premium Gem	July 17	11¼	$2\frac{11}{16}$
Dainty Duchess	" 29	10¾	2
Telephone	Aug. 5	10½	1⅝
Quite Content	July 30	10¼	$1\frac{9}{16}$
Stratagem	Aug. 5	10¼	1⅞
Heroine	July 27	9¾	2
The Lincoln	" 30	9½	2⅜
Gregory Surprise	" 14	8¼	$1\frac{9}{16}$
Early Giant	" 20	7½	1⅛
Gradus Extra Early	" 27	5⅝	1⅛
Thomas Laxton	" 17	4¾	$1\frac{9}{16}$

SCOTT.

HOME-GROWN VERSUS IMPORTED SEED.

Variety.	Imported Seed.		Home Grown Seed.	
	First ready for use.	Yield, Green Peas in Pod. 15-foot row.	First ready for use.	Yield, Green Peas in Pod. 15-foot row.
		Lb.		Lb.
Gradus	July 27	5 5/8	July 20	10 1/2
Stratagem	Aug. 5	10 1/4	Aug. 2	13
Telephone	" 5	10 1/2	July 25	12 1/8
Thomas Laxton	July 17	4 5/6	July 17	11 1/4

In addition to the vegetables previously reported on, Brussels sprouts, celery, cucumbers, muskmelons, watermelons, squash, pumpkins, tomatoes, and leeks were tested, but, owing to the unfavourable season, did not become sufficiently advanced to make satisfactory tests.

ORNAMENTAL GARDENING.

THE ARBORETUM.

All the more hardy kinds of trees and shrubs made a vigorous growth, due to the abundance of moisture in the soil. A part of the season's growth was frozen back on some trees by the unusually severe, early September frosts. The amount of damage can only be fully determined when the buds begin to swell in the spring.

Experimental work has consisted in testing out different kinds of trees and shrubs. Forty-eight kinds are under trial, with a total of 371 varieties. No protection is afforded the trees, and artificial watering is not practised.

The flowering shrubs were a particularly interesting feature of the arboretum. A continuous bloom was maintained from early spring until quite late in the summer. *Spiraea arguta* was in bloom on May 10, and continued blooming for a month. By May 21, the Missouri Currants were flowering. Some varieties of the Caragana were in bloom by May 25. June was the month for the lilac, and honeysuckle. Twenty-nine varieties of lilac are under test. The *Syringa chinensis* (Rouen lilac) bore from thirty to forty large clusters of flowers. The *Syringa villosa,* and *Syringa Josikaca* are quite hardy, and bloomed freely. Of the varieties of common lilac, the Congo proved to have the most bloom.

HEDGES.

Twenty-one different kinds of hedges have been set out with a view to determining the most ornamental, and most useful kinds. The laurel-leaved willow, white spruce, lodge pole pine, and Josika's lilac have grown splendidly. The *Caragana arborescens* has proven to be very hardy, and has been extensively used on the Station. The young plants growing up around the base of the tree give a dense bottom, and the numerous branches provide an almost impassible hedge and a splendid wind-break.

HERBACEOUS PERENNIALS.

The border of perennial flowers was augmented by the addition of a collection of iris received from the Brandon Experimental Farm, and a number of plants of various kinds that had been grown in the seedling beds on the Station.

SCOTT.

A collection of pæonies planted in the autumn of 1912, and spring of 1913, bloomed for the first time. Twenty-one varieties made an excellent showing and were the admiration of the visitors. Hollyhocks, daffodils, and Canterbury bells, that are usually considered not sufficiently hardy, bloomed quite freely. The Canterbury bells in particular, were magnificent.

The following is a list of perennial flowers that appear sufficiently hardy to warrant recommending:—*Aquilegia* (Columbine), *Dianthus montanus* (Pinks), *Dianthus barbatus* (Sweet William), *Delphinium* (Perennial Larkspur), *Gypsophila paniculata* (Baby's Breath), *Hesperis matronalis* (Sweet Rocket), *Iris*—German and Siberian (Flags), *Lupinus* (Lupine), *Lychnis chalcedonica* (Maltese Cross), *Pœonia* (Pæony), *Papaver nudicaule* (Iceland Poppy), *Papaver orientale* (Oriental Poppy), *Polemonium* (Jacob's Ladder).

BULBS.

The tests with varieties of tulips have been continued. Thirty-four varieties were tried. The collection of tulips included both single and double varieties, also a considerable number of Darwin or late flowering tulips, and two varieties of the Parrot type. In as far as the past season's experiments were concerned Pottebakker White, Duchesse de Parma, Chrysolora, and Proserpine proved to be the best early single sorts. Couronne d'Or was one of the best double tulips. Baronne de la Tonnaye was one of the most vigorous growing and free blooming of the Darwins. The Parrot tulips did not appear to be sufficiently hardy.

ANNUAL FLOWERS.

The list of annual flowers included sixty kinds, with a total of two hundred and five varieties. The object in view in the experiments with flowers is to determine the more hardy and satisfactory kinds and varieties for prairie conditions. The flower tests are conducted under conditions similar to those prevailing on the average farm. Artificial watering is not resorted to, nevertheless a magnificent showing of flowers was secured from seeds grown in the hotbed and transplanted in June. Also, in the case of the more hardy kinds, from seeds sown in the open.

The following is a list of flowers that were started in the hotbed early in April, and transplanted to the flower beds during the second week in June:—

Scott.

FLOWERS STARTED IN THE HOTBED.

Kinds.	Height.	Flowering Season.	Remarks.
FLOWERS STARTED IN THE HOTBED.	Inches.		
Acroclinium	13	July 14 to frost.	Everlasting flower.
Amaranthus tricolor	11		Foliage plant.
Antirrhinum, (Snapdragon) (11 varieties)	8 to 20	“ 29, “	Tall growing varieties satisfactory.
Arctotis grandis	23	Aug. 14, “	
Aster, (29 varieties)	4 to 21	“ 10, “	Ostrich plume, and Victoria types best.
Browallia elata, blue	13	“ 10, Sept. 4.	Flowers insignificant.
Carnation, pink	19	“ 10, to frost.	Too late for this district.
Clarkia elegans	26	July 12, Sept. 15.	Very satisfactory.
Cosmea, (Cosmos)	31	“ 12, to frost.	Splendid for background.
Dimorphotheca aurantiaca	12	“ 12, “	Many coloured, daisylike flowers.
Godetia	12 to 20	“ 24, “	Very satisfactory.
Helichrysum	27	“ 24, “	Everlasting flower.
Marigold	19 to 23	“ 12, “	Add a touch of colour to back ground.
Nemesia, (6 varieties)	8 to 12	“ 12, Sept. 15.	Splendid, especially in moist soils.
Nicotiana, (Hybrid)	30	“ 20, to frost.	Sweet scented.
Pansy, (6 varieties)	6	“ 12, to ey. Se	pt.
Petunia	15	“ 15, “ “	
Phlox Drummondii, (7 varieties)	9 to 15	“ 15, to frost.	Good for cut flowers.
Schizanthus, large-flowered, Hybrids	20	“ 19, Sept. 10.	Very satisfactory.
Stock, (7 varieties)	14 to 18	“ 10, to frost.	
Swan River Daisy	12	“ 11,	Beautiful, blue, free-flowering plant.
Zinnia	13 to 16	Aug. 2, to frost. (Aug. 23)	Very susceptible to frost.
FLOWERS STARTED IN THE OPEN.			
Alyssum	6	July 17, to frost.	Splendid border plant.
Bartonia aurea	29	“ 28, to frost.	Flowers yellow, numerous.
Candytuft	12 to 14	“ 29, to frost.	Can secure both white and carmine.
Cornflower	36	Aug. 1, to frost.	Vigorous growing.
Castor-Oil Plant	26		Splendid foliage plant.
Centranthus macrosiphon	22	“ 8, to frost.	
Jacobaea	18	“ 31, to frost.	
Leptosiphon hybridus	7	July 4, Sept. 5.	Beautiful border plant.
Linum grandiflorum rubrum	13	“ 29, Sept. 11.	Scarlet flax.
Lupinus	20 to 38	Aug. 2, to frost.	
Mignonette	17	“ 2.	An old favourite.
Nasturtium, (9 varieties)	13 to 20	“ 4, to frost.	Tall variety best.
Portulaca, double	5	“ 7.	Spreading habit.
Poppy, annual	36	“ 7, to frost.	
Viscaria cardinalis	19	July 19, to frost.	Very satisfactory.

SCOTT.

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

REPORT OF THE SUPERINTENDENT, W. H. FAIRFIELD, M.S.

CHARACTER OF SEASON.

The year 1915 proved to be an exceptional one for small and tree fruits, vegetables, and flowers. The weather during the fall of 1914 was favourable to the ripening up of all tree growth so that bushes and trees of all kinds went into the winter in excellent condition. During the late summer and fall more than the normal amount of rain and snow fell so that the soil was thoroughly wet. The winter of 1914-15 was exceptional in character in that the dry winds usually so prevalent were entirely lacking. Instead of long periods during the winter with the land bare of snow there was continuous sleighing from the first week in December to the first week in March. The weather during April and May was normal with no sudden or severe cold dips and the result was profuse bloom on all fruit, flowering trees and shrubs. All the apple trees on the Station as well as in the district that were old enough to bear had fruit. During the summer there was an ample rainfall so that taking everything into consideration the season from a horticultural standpoint was extremely satisfactory.

The last frost in the spring was on May 16 when 30° Fahr. was registered, although there were very cool nights on June 14 and 15 when the mercury dropped to 36° as well as on June 28 when 37° was recorded. No damage, however, could be noticed even on the most tender foliage. The first frost in the fall came on the night of September 11, when 31° was registered and a killing frost the two succeeding nights, when 26° and 20° were respectively registered.

Table giving date of last frost in the spring and first frost in the fall during the last eight years, from the meteorological records of the Lethbridge Station.

Year.	Last frost.		First frost.		First killing frost.	
	Date.	Temperature.	Date.	Temperature.	Date.	Temperature.
		°		°		°
1908	May 2	32·0	Sept. 23	32·0	Sept. 26	19·2
1909	May 29	29·8	Aug. 28	29·8	Sept. 14	26·8
1910	June 4	31·0	Aug. 23	31·5	Sept. 12	26·3
1911	May 28	29·6	Aug. 27	29·4	Sept. 23	26·3
1912	June 3	32·0	Sept. 15	24·0	Sept. 15	24·0
1913	May 12	29·2	Sept. 12	32·0	Sept. 24	26·2
1914	May 12	29·8	Sept. 15	31·0	Oct. 7	20·1
1915	May 15	31·0	Sept. 11	31·2	Sept. 12	26·5

Average date of last frost in spring May 21.
Average date of first frost in fall September 8.

NO IRRIGATION.

Owing to the generous rains during May, June, and July no irrigation was required. Consequently in reporting the results from the two farms—irrigated and dry—no separation will be made as has been the custom in past reports.

POTATOES—TEST OF VARIETIES.

On the dry land, twenty-five varieties were planted May 20 on summer-fallow. Barnyard manure was applied in 1914 before the land was ploughed for the fallow. The rows were 30 inches apart and the sets were placed 12 to 14 inches apart in the row. They were dug October 18.

The same varieties were planted on the irrigated part of the farm on land broken and backset from brome grass sod in 1914. No irrigation was applied. They were planted in the same manner on May 13, and dug October 16. The yield was computed in each case from one-hundredth of an acre plot. Spraying was necessary on three occasions to subdue the ravages of the Colorado beetle which appeared in great numbers.

POTATOES.

No.	Variety.	On dry farm.				On irrigated farm.			
		Total yield per acre.		Yield per acre marketable.		Total yield per acre.		Yield per acre marketable.	
		Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.
1	Morgan Seedling	335	00	300	00	545	00	506	40
2	Empire State	293	20	265	00	513	20	466	40
3	Reeves Rose	288	20	248	20	610	00	568	20
4	Irish Cobbler	283	20	256	40	446	40	405	00
5	New Queen	278	20	246	40	540	00	493	20
6	American Wonder	276	40	256	40	429	10	406	40
7	Rochester Rose	268	20	240	00	490	00	448	20
8	Early Ohio	263	20	233	20	418	20	380	00
9	Houlton Rose	256	40	211	40	450	50	427	30
10	Vick Extra Early	255	00	223	20	551	40	530	00
11	Table Talk	251	40	203	20	471	40	430	00
12	Late Puritan	243	20	218	20	463	20	441	40
13	Factor	235	00	203	20	428	20	401	40
14	Dalmeny Beauty	233	20	171	40	438	20	388	20
15	Early Norther	228	20	206	40	528	20	498	20
16	Gold Coin	221	40	205	00	350	00	338	20
17	Money Maker	210	00	170	00	401	40	383	20
18	Early Hebron (White)	196	40	163	20	295	50	255	00
19	Dreer Standard	190	00	171	40	380	00	358	10
20	Wee MacGregor	173	20	140	00	471	40	430	00
21	Everett	168	20	116	40	395	00	355	00
22	Hard to Beat	165	00	125	00	455	00	411	40
23	Rawlings Kidney (Ashleaf Kidney)	158	20	141	40	445	50	413	20
24	Green Mountain	146	40	125	00	285	00	255	00
25	Carman No. 1	126	40	106	40	350	00	300	00

In the table it will be noted that the Gold Coin was rather low. This is rather unusual and hard to explain for during the last eight years, of all the varieties tested, it has averaged high (this includes the results of 1915) heading the list on the dry land and almost at the top on the irrigated land. We therefore recommend from the 8 years' tests the following varieties for main croppers:—Gold Coin, Morgan Seedling, Wee MacGregor, Table Talk, and Empire State, but personally prefer the first-named. Careful observations were taken by digging a few hills each week during the season of each variety to gather data regarding the earliness of the different sorts under test. Out of the 25 varieties tested the following stand out for earliness:—Irish Cobbler, Vick Extra Early, Rochester Rose, and Reeves Rose.

LETHBRIDGE.

To obtain potatoes for the table early in the season it may be of interest to those who have not tried it out to take any of the early varieties and from the first to the second week in March, spread out as many as convenient in the light, opposite a window if possible, and allow them to sprout. Whole potatoes, not too large, should be used for this purpose, care being taken to put them seed end up. Sprouting will gradually commence and by the last week in April these can be planted, the sprouts by this time being from half an inch to one inch in length, thick and green in colour, very different to the slender white sprouts that ordinarily come on the potatoes in the bin.

THE VEGETABLE GARDEN.

Owing to the good fall of snow which did not melt until spring the soil was in prime condition for sowing seeds. The garden was manured and ploughed in the fall and in the spring a portion was again ploughed, the remainder being double disced. The latter proved to be the better method as an even germination was obtained whereas with the former an uneven germination resulted.

Beets.—All varieties as in previous years did well, seven varieties being tested. Four of these can be recommended for table use, namely: Black Red Ball, Crosby Egyptian, Early Model, and New Meteor, the first named being the best, although small compared with other varieties and yielding only about half as well, but when cut the flesh is a rich dark red throughout while the larger varieties being streaked with white are less attractive for table use.

Beans.—Eight varieties were under test, all yielding a heavy crop of pods. Owing to the early frost no seed ripened this year. Varieties recommended are as follows: Bountiful, Fordhook Favourite, Wardwell Kidney Wax for earliness, and for late varieties Refugee or One Thousand to One.

Celery.—All varieties made good growth before being taken inside, eight varieties being under test. Among the best is White Plume, an exceptionally good variety which yielded 48 pounds from a 15-foot row, the plants being 6 inches apart. Other good varieties are Golden Self Blanching, French Success, Evans Triumph, and Noll Magnificent. The seedlings were all started in a hotbed.

In connection with the growing of celery a number of cultural experiments were carried out. To determine the best method to use in blanching, tests, with boards, soft pliable material, and earth, were made. The test with the boards gave best results. A row 30 feet long was planted. When the plants were about one foot high, a board 12 inches wide was placed on each side of the row as close as possible to keep out the light. This proved very satisfactory as the plants were of good size, solid and very tender. The 30-foot row yielded 55 pounds. This method greatly reduces the cost of production.

Another row of celery of the same length and at the same period of growth was treated in a similar manner with pliable material put on each side of the row and held into place by pegs. The plants in this case were very weakly when dug, the outside stalks having withered, leaving but few stalks in the centre. The row yielded 37 pounds.

The experiment with earth which was applied around the plants as necessary proved to be the most costly method and the celery took longer to bleach by this method than with the boards. The total yield was 72 pounds, being the heaviest yielder of the three methods.

Cabbage.—The cabbage gave splendid results this year, eight varieties being under test, Early Paris Market and Copenhagen Market being the earliest. Twelve average heads of the latter weighed 135 pounds. For a good main crop, Improved Amager

Danish Roundhead, Fottler Improved Short Stem, Nofalt, and Flat Swedish can be recommended. Of the latter 12 average heads weighed 182 pounds. Cabbage should be started in the spring in a mild hotbed.

Cauliflower.—Early Snowball, Danish Giant, and Improved Early Dwarf Erfurt were under test. These are all good varieties, 12 average heads of Early Snowball weighed 75 pounds. Danish Giant was later, but 12 average heads weighed 105 pounds. In planting cauliflower, if two later plantings are made, the Danish Giant is preferred for this purpose, and a continuous supply can be had till severe frosts come. All the cauliflower were started in a hotbed.

Cucumber.—This was an exceptional year for cucumbers, all varieties giving good yields and were in full bearing when killed by frost. Seven varieties were under test. Three plants of each variety were started in pots in the hotbed, but were soon moved into a cold frame. Cold damp weather followed, which spoiled the majority of the plants. The remaining plants were planted out in the garden on June 15, while the seeds were sown in the open on June 1. The plants started in the frame proved to be the earlier by a week and gave the heavier crop in each case. Among those recommended are Davis Perfect, Peerless Improved or White Spine, and Cool and Crisp.

Corn.—This was an ideal year for corn but owing to inferior seed the germination in many cases, was poor. Eleven varieties were under test. The Squaw, sown on April 17, was the earliest maturing variety, the first being ready for use on July 27. The Early Malcolm, Early Iowa, and Early Fordhook, being the earliest of the sweet corn varieties, were planted on May 6, and were ready for use on August 18. The best of the later varieties are Golden Bantam and Pocahontas.

Carrots.—Chantenay Half Long and Early Scarlet Horn were under test, both proving satisfactory.

A cultural experiment was carried out with carrots planted at different distances apart, the Chantenay variety being used. Three rows 33⅓ feet long were thinned to 1½, 2, and 3 inches apart respectively. The wider planting gave the best returns, the 1½-inch planting yielding 70 pounds, the 2-inch, 96 pounds, and the 3-inch 106 pounds per row.

Leeks.—French Carentan and English Glory were under test. The seeds were sown in a hotbed and planted out in rows 6 inches apart. The plants made good growth.

Lettuce.—All varieties did very well, forming good heads. Of the 6 varieties tested the Iceberg and Dreer Allheart were the earliest being sown on April 14 and ready for use on June 14, lasting until August 11. Grand Rapids was the best variety for forcing under test and for a good cabbage heart lettuce the first mentioned can be recommended.

Melons.—Two varieties of water melons and two varieties of musk melons were tried out. Although a large number of fruits developed, none reached maturity.

Onion.—All the varieties under test did exceptionally well and matured before frost came. Thirty varieties were sown in rows 30 feet long. The White Queen, White Barletta, and White Pearl were the first to ripen. To ensure a crop of onions reaching maturity before frost it is advisable to include white onions when sowing. If small white onions are required for pickling, sow any of the above mentioned varieties very thickly and do not thin. Among the varieties recommended are Yellow Globe, Red Globe, Large Red Wethersfield, Early Red Flat, and New Australian Brown. These varieties yielded from 32 to 38 pounds from a 30-foot row this season.

LETHBRIDGE.

Cultural experiments.—The seed was sown in the garden April 20, and the following yields were obtained from a row 33·3 feet long in each case. In the last column of the table is given the yields obtained from plants started in a hotbed and transplanted into the garden on June 5, 3 inches apart.

——	Thinned to 1 inch apart.	Thinned to 2 inchesapart.	Thinned to inches apart	Transplanted from hotbed.
	lb.	lb.	lb.	lb.
Yellow Globe	64	68	46	50
Large Red Wethersfield	51	50	40	68
Extra Early Red	37	36	32	49

Starting the seed in a hotbed and transplanting is a more expensive way but the onions produced were more uniform in size. Another advantage of this method is that the crop is more certain, for, in a dry season, the seed sown in the open may not germinate well. We are not prepared to recommend the practice, for the advantages obtained will scarcely compensate for the additional trouble and labour required. If onion seed is sown in the spring as soon as the land is freed enough of frost to be worked, any one of the above varieties will give fairly satisfactory results in a favourable season. Our seasons, however, are short and difficulty in getting the onions to mature by fall is often experienced.

Onion sets were planted 2 inches deep and 3 inches apart in a row 33½ feet long and produced 84 pounds. This method of growing onions is the safest, as one can always be sure of obtaining a well ripened crop. The sets may be raised at home by sowing the seeds very thickly in rows so as to keep the plants crowded and limited in size. In the late summer they should be pulled and dried out and then stored for the winter in a dry place where they will not be subjected to severe freezing. A row each 100 feet long of Yellow Globe and Extra Early Red onion seed was sown for sets and produced 218 and 226 pounds respectively.

Parsley.—Double Curled was the only variety tested, and made splendid growth, the leaves being large and well curled.

Parsnips.—Parsnips as usual did very well but should always be sown where some of them can be left in the ground all winter as they get very soft when out of the ground a short time unless covered with sand in the cellar. Thinning experiments were carried out. Three rows were thinned out to 2, 3, and 4 inches respectively. The 3-inch test yielded the heaviest, giving 100 pounds from a 33½-foot row.

SEED PRODUCTION.

It is probably easier to raise seed of the parsnip than any other of the garden roots. When left in the ground they keep perfectly till spring when they at once start a seed stalk if left undisturbed, and usually produce an abundant crop of seed. A 250-foot row of Hollow Crown planted in 1914 was left for seed and yielded 180 pounds of seed, although it is estimated that one-sixth of the crop was lost by shattering out owing to the fact that the stalks were allowed to get too ripe before cutting.

Peas.—Seventeen varieties were under test. The Thomas Laxton and Gradus were the earliest, being sown with the other varieties on April 17 and ready for use on July 3. The Early Giant, Quite Content, and Telephone were the best varieties for a main crop. Owing to a severe attack of mildew a number of the later varieties did not do so well.

Experiments were carried out with four sowings of Thomas Laxton peas, each sowing seven days apart. The following are the yields of green peas from a 50-foot row in each case. The peas were sown 1 inch apart in the row.

1st sowing April 20	45 pounds.
2nd sowing April 27	58 "
3rd sowing May 4	51 "
4th sowing May 11	35 "

Pumpkins.—The Jumbo, Large Field, and Sweet As Sugar, were the varieties tested. All varieties developed well, but only a few of the fruits matured. Three plants of each variety were started in a hotbed in pots, being planted out in the garden on June 15, and three hills of each variety were sown in the open on May 31. Those started in the hotbed were first in ripening. The following yields will give the comparison: Jumbo, plants started in a hotbed, 243 pounds, 131 pounds ripening; from seed sown in the open, 256 pounds, 74 pounds ripening; Large field, plants started in hotbed, 260 pounds, 167 pounds ripening; from seed sown in open 269 pounds, 58 pounds ripening; Sweet as Sugar, plants started in hotbed 118 pounds, 78 pounds ripening; from seed sown in open 115 pounds, 18 pounds ripening. It may be worthy of note that Sweet as Sugar, although not so large as the other varieties, are good keepers.

Radish.—Scarlet Turnip White Tipped, and Forcing Turnip Scarlet were the varieties under test. Both produced a good crop. Seed sown on April 16 were ready for use May 22. The seed should be sown rather thickly so as to keep the roots small and ensure a continuous supply. If sown thin they are usually all ready at the same time, getting too large before they can be used.

Squash.—Eight varieties were under test. Three plants of each variety were started in pots in the hotbed, being reported when large enough and hardened off in cold frames. Those started in the hotbed were the first to be ready for use. Among the best varieties are Golden Hubbard, Delicious, Long White or Vegetable Marrow, and English Marrow. The following are the results obtained from the plants started in pots in the hotbed compared to those sown in the open.

Golden Hubbard—Started in hotbed	114	pounds,	86	pounds	ripening.
Sown in open	87	"	63	"	"
Delicious—Started in hotbed	100	"	63	"	"
Sown in open	62	"	28	"	"
Long White—Started in hotbed	207	"	134	"	"
Sown in open	192	"	75	"	"
English Vegetable Marrow—Started in hotbed	278	"	168	"	"
Sown in open	128	"	72	"	"

Tomatoes.—None of the eight varieties under test ripened many tomatoes owing to the cool wet summer. The plants were started in a hotbed and transplanted into 2½-inch pots and again into 4½-inch and finally into 6-inch pots. On May 15 they were turned out of the pots and planted, care being taken not to disturb the roots. This method ensured the plant having no check in its growth and giving it a good start. Five plants of each variety were set out. The following varieties can be recommended for earliness and yield:—

Northern Adirondack Earliana	2	pounds	ripened,	54	pounds	green.
Alacrity	3¼	"	"	39	"	"
Earliana (Sunnybrook strain)	1¾	"	"	37	"	"
Bonny Best	½	"	"	32	"	"
Rennies XXX (early round scarlet skin)	1	"	"	32	"	"

LETHBRIDGE.

Continual pinching out of the side shoots is necessary to get the fruit to develop as quickly as possible. When the shoots are large select 1 to 4 of the shoots, pinching the others out, the remainder can either be tied to sticks or left on the ground; cleaner tomatoes being the only advantage in the former method. All side shoots must be pinched out of each stem left. After the fourth or fifth flower appears the point or crown should be pinched out above the first leaf after the flower, this gives all the fruit a chance to develop. It is needless to note that the less fruit allowed to grow on a plant the better are the chances of ripening.

Spinach.—Spinach is one of the first vegetables ready for use. The leaves are cut while young and boiled for table use as one would prepare cabbage. The Victoria was the only variety under test. The seed can be sown in the fall as it is quite hardy.

Salsify or Vegetable Oyster.—Long White was the only variety used. It made good growth.

FLOWERS.

ANNUALS.

Owing to the short season and the tenderness of a number of varieties of annuals, it has been found necessary to start the plants in hotbeds. A circular describing the method of preparing a hotbed can be had on application. If a hotbed is not available the seeds may be sown in a window box. As soon as the second set of leaves appears the plant should be transplanted into another shallow box about 2 inches apart and where they may remain until about the 1st of June, when danger of frost is past, and they can be set out in the open. It is not wise to attempt to grow them in a box without transplanting them into another box as just described for unless transplanted they are inclined to grow too spindly and tall.

This was an exceptionally good season for annuals as there were frequent showers at the time of planting out and during the season. There were approximately 12,000 plants set out, which included fifty varieties of annuals. Seventy varieties of sweet peas were sown as early as possible in the spring and made a splendid showing.

Owing to the character of the season very few varieties ripened seed. The following kinds can be numbered among the easiest to raise: Antirrhinum (or snapdragon), larkspur, phlox, verbena, pansy, helichrysum (everlasting), zinnia, petunia, marigold, nicotiana, lavatera, coreopsis, and lobelia. All of the above can be obtained in various colours. The following are perfectly hardy and grow best sown in the open: Nasturtium, mignonette, poppy, calendula and candytuft.

Bulbs.—The first thing necessary when planting bulbs is to have the ground in readiness, it being prepared during the summer by applying a heavy coating of well rotted manure and digging a foot deep, care being taken to keep the manure well down. At the beginning of October the bulbs should be planted 4 inches apart, either in rows or massed. Root development commences early in October under natural conditions and continues throughout the winter. If the bulbs are planted later than the end of October there is less chance of getting good blooms owing to the lack of root development in the fall. Tulips, and daffodils, especially the former, do extremely well. Thirty-two varieties of tulips and fourteen varieties of daffodils were received from Holland and planted in the borders of the lawns in October of 1914. From about the last week in April to the end of May the border was a mass of colour. The early tulips came out followed by the late-flowering varieties, and last of all came the Darwin tulips. The varieties recommended are: Early tulips—Vermilion Brilliant (bright vermilion), Proserpine (crimson pink), La Reine (white), Joost Van Vondel (white), Artus (scarlet), Chrysolora (yellow), and Cottage Maid (pink). Late flowering—

Isabella (rosy pink), La Candeur (white), La Merveille (orange red), Gesneriana Spathulata (bright scarlet). Darwin Tulips—Clara Butt (apple blossom), Europe (carmine red), Farncombe Sanders (scarlet), Pride of Haarlem (carmine pink), Madam Krelage (bright pink light edge).

Daffodils.—Princeps, Golden Spur, Van Sion, Emperor, Empress, Poeticus (white), Poeticus Glory (white), and Victoria.

HERBACEOUS PERENNIALS.

In planting perennials it must be borne in mind that the plants are to stay in the ground for several years. This means that they will require very rich soil to maintain their standard of perfection. The ground should be prepared the year before, being heavily manured and dug or ploughed as deeply as possible. A good collection of varieties has now been established on the Station from seed sown in 1912, most of the plants having made strong and healthy growth. A well-selected collection of perennials is perhaps the easiest and cheapest way to have a continuous supply of flowers. The following kinds can be recommended: Paeonies, irises, delphiniums, aquilegias, coreopsis, gypsophila, phalaris, aconitum, spiraea, papaver, polemonium, veronica, thalictrum, dianthus, lupinus, campanulas, hollyhocks, trollius, rudbeckia, and phlox. All of the above varieties can be had in variety.

ROSES.

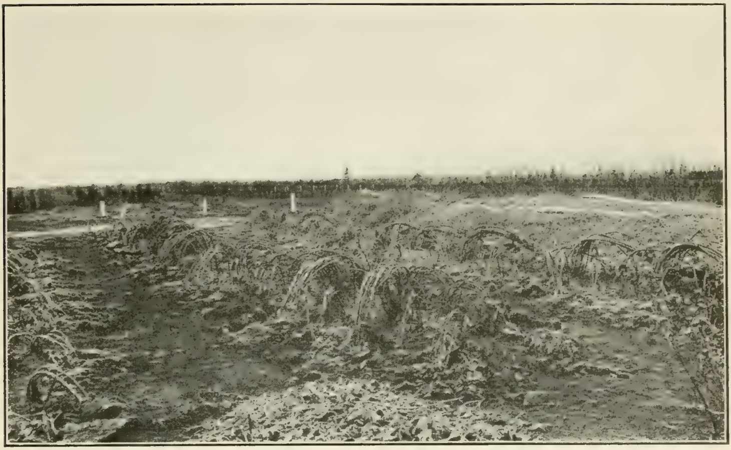
There are now twenty-five varieties of roses grown at the Station. Of these, fifteen are Hybrid Perpetuals and ten Hybrid Teas which are the first to bloom and continue to bloom until spoiled by frost in the fall. Very little attention is required in growing roses after the plants have become established, although they are often attacked by aphis during the summer. For this trouble, spraying continuously with water is a good preventive when the plants are slightly attacked. When severely attacked kerosene emulsion may be used but care should be taken to see that it is not too strong when applied. In the fall the plants should be cut back to about 9 or 12 inches when the growth is not very vigorous, or a few inches longer if the plant has made strong growth. They should be tied together with a piece of twine and covered with moist soil. In the spring this covering may be removed when the buds begin to swell.

Among the varieties to be recommended are the following: Hybrid Perpetuals; Frau Karl Druschki (white), Magna Charta (pink), Ulrich Brunner (red cerise), Baroness Rothschild (light rose, shaded white), Mrs. R. G. Sharman Crawford (rosy pink), Charles Lefebvre (velvet shaded crimson), Paul Neyron (dark rose), Hugh Dickson (crimson), Mrs. J. Laing (soft pink), and Senateur Vaisse (salmon).

Hybrid teas: Le Progres (nankin yellow), Madame Ravary (golden yellow), Gruss an Teplitz (semi-double crimson), Caroline Testout (salmon pink), Etoile de France (velvety crimson), Ecarlate (brilliant scarlet), Lady Ashtown (rose, shaded to yellow), and Killarney (flesh, shaded white suffused with pink).

ORNAMENTAL SHRUBS.

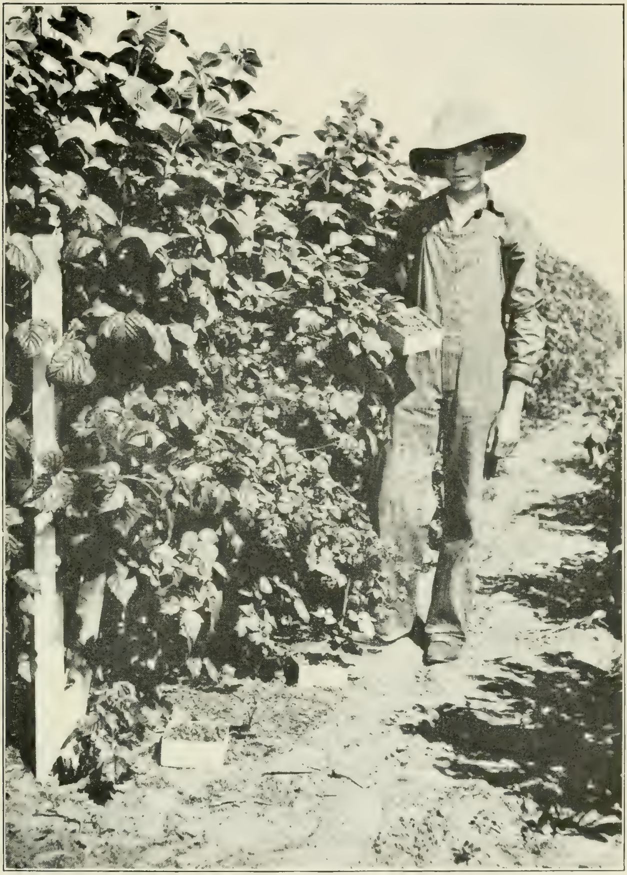
Fifty kinds of shrubs are being tried out for hardiness. There are 170 varieties in all. A number of kinds have died out entirely, others are only half hardy, while quite a number have proved to be quite hardy and well suited to our conditions. A large number flowered very freely this year, making a splendid show. Among those to



Raspberries being prepared for winter. In the foreground are the branches bent over and held by clods of earth and in the background they are covered with straw held down by poles. Rosthern Experimental Station.

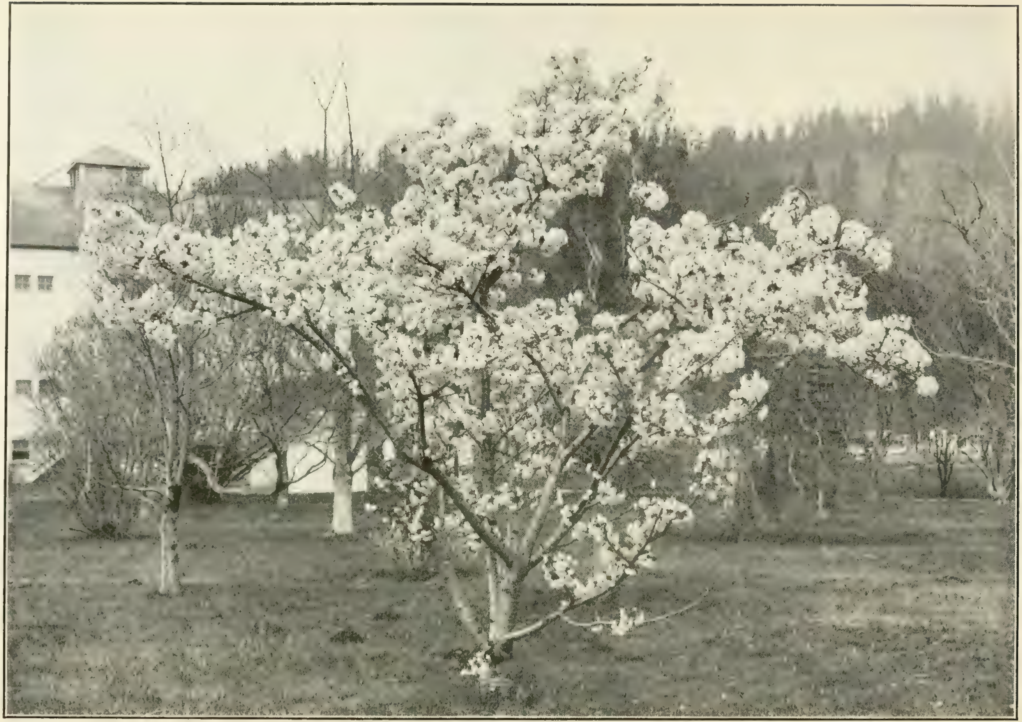
The Superintendent's residence. Experimental Station, Lethbridge, Alta.

A Yellow Transparent apple tree with some of the fruit. Experimental Station, Lethbridge, Alta.



Cuthbert Raspberries. Experimental Station, Lacombe, Alta., 1915.

PLATE L.



Agassiz, B.C. A type of early blooming tree. Japanese Flowering Cherry.

be recommended are: Lilacs—Charles X, Charles Joly, Souvenir de Ludwig Spaeth, Jacques Calot, Madame Fernande Viger, Congo and Boussingault. All blooming from the middle of May on till about the middle of June. These are followed by *Syringa villosa,* a lilac which flowers when the others are past their best. *Lonicera tatarica grandiflora, L. alpina, L. grata,* and *L. Albertii,* blooming toward the end of May. Philadelphus, Manteau D'Hermine, and Fantaisie, blooming about the middle of June. *Cytisus triflorus* and *C. hirsutus* flowering towards the end of June. *Spiraea multiflora arguta* blooming at the end of April. *S. Menziesii triumphans* blooming about the first week in July. *Caragana grandiflora, C. arborescens, C. frutescens* and *C. pygmaea,* blooming from the middle of May.

Experiments are being carried on with shrubs for hedges, 20 varieties being used. Most of these are answering the purpose very well. For a hedge from 3 to 6 feet high the following can be recommended: *Caragana arborescens* (Siberian pea tree), probably the most satisfactory of all, *Crataegus Crus-Galli* (Cockspur hawthorn), *Syringa Josikaea* (Josika's lilac), *Rhamnus Frangula* (Alder buckthorn), *L. cathartica, Cotoneaster sinensis,* and *Acer tatarica Ginnala.* When taller hedges are required, Native cottonwood, Manitoba maple, *Elaeagnus angustifolia* (Russian olive), and Green Ash are suitable. For rapid growing windbreaks, the Native cottonwood, Sharp-leaved and Laurel-leaved willows are good, also the Golden willow, although it is not quite so hardy as the other two.

The spruce and pine trees did very well this season making very good growth, some of the trees making as much as 2 feet.

SMALL FRUITS

CURRANTS.

Owing to the mild weather in April the sap commenced to flow earlier than usual, the currant bushes being in full bloom two weeks in advance of the usual time, but no bad results followed.

A few hints on pruning may be of interest to those who are not acquainted with this necessary item of culture. Red and white currants are pruned by removing all cross wood and weakly branches and most of the young growth or suckers growing around the base of the bush. After this has been done the young shoots on the remaining branches may be cut back to two buds but leaving the leading shoot about 6 inches long. The fruit is borne on old wood. Black currants on the other hand bear their fruit on young wood. This makes it necessary to leave plenty of young wood and only cutting out the old wood of little value and suckers around the base of the bush, although some strong shoots should be left to replace the old branches when necessary.

Black currants.—Three bushes each of 17 different varieties were under test, all giving excellent results, the yield being noticeably increased this year. The following are the varieties considered best:—

	Yield from 3 bushes.	Yield per acre.
Eagle	38 qts. 1 pt.	15,515 qts. 1 pt.
Saunders	37 " 1 "	15,112 " 1 "
Merveille de la Gironde	34 " 1 "	13,903 " 1 "
Ontario	32 " 1 "	13,097 " 1 "

Red currants.—Three bushes each of 19 varieties were under test, all giving good results this season. The following are among the best varieties:—

	Yield from 3 bushes.	Yield per acre.
New Red Dutch	46 qts.	18,538 qts.
Cumberland	38 "	15,314 "
Red Dutch	34 "	13,702 "
Victoria Red	29 "	11,687 "

White currants.—Three bushes each of 9 varieties were under test, the best of which are the following:—

	Yield from 3 bushes.	Yield per acre.
White Pearl..	37 qts.	14,911 qts.
Large White..	26 " 1 pt.	10,679 "
White Grape..	25 " 1 "	10,276 "

GOOSEBERRIES.

The difficulty found in the raising of gooseberries is the killing back of the wood in severe winters, but in this regard one variety known as the Houghton has been found to be perfectly hardy. This variety is a very rapid grower, producing an abundant crop of fruit every year. Although the fruit is small compared to that of other varieties they are excellent for general purposes. Care must be taken to keep the bushes under control as they are very apt to spread badly.

This is the first season the gooseberries under test have produced a satisfactory crop of fruit. Care should be taken while the bushes are young to keep all the suckers growing around the base dug out, as cutting them off at the ground does not kill them and they will come on the following season. Pruning can be done in the fall or in the spring before the buds start to swell. The method recommended with red and white currants can be practised.

The varieties of gooseberries which did well for us this season are: Whitesmith, Smith Improved, and Downing.

RASPBERRIES.

Nine varieties were under test, each variety being planted in a double row 30 feet long. Owing to the canes killing back during the winter if left unprotected, it is necessary to bend the canes down and cover completely over with moist soil. Straw or other material has been found to be of no use for this purpose. Preparatory to covering the canes up in the fall all the dead and weakly canes should be cut out. A small quantity of soil should be placed at the base of the canes to reduce the risk of breaking them when turning them down.

The following is the yield obtained from the varieties recommended:—

	Actual yield.	Yield per acre.
Loudon..	35 qts. 1 pt.	3,692 qts.
Ruby..	30 " ½ "	3,146 "
Marlboro..	29 "	3,061 "
Herbert..	17 "	1,768 "

STRAWBERRIES.

Strawberries are perhaps the easiest to raise and the most satisfactory of the small fruits. The best results are obtained by setting the plants out in the spring in well prepared rich soil. They may be put out in August, but owing to the short period of growth between then and frost, the results obtained are not so satisfactory as when spring planting is done. Plenty of cultivation should be given at all times and no weeds should be allowed to grow. In the late fall or early winter the land should be covered a few inches deep with old straw or hay, preferably material free from all kinds of seeds. It is not wise to use manure for this purpose.

The yield of fruit in 1915 was greater than we have ever obtained. The following table gives the results obtained for the last five years:—

STRAWBERRIES (Irrigated)—Yield per Acre.

No.	Variety.	1911.	1912.	1913.	1914.	1915.	Average yield for 5 years.
		Qts.	Qts.	Qts.	Qts.	Qts.	Qts.
1	Senator Dunlap	139	2,201	2,559	934	4,565	2,080
2	August Luther	325	372	3,569	1,193	3,890	1,870
3	Splendid	294	43	1,556	389	6,017	1,660
4	Ruby	511	77	2,179	467	3,864	1,420
5	Pocomoke	124	15	2,109	1,141	3,423	1,362
6	Williams	170	0	1,660	1,141	3,631	1,320
7	Bismarck	217	124	1,867	1,297	2,905	1,282
8	Tennessee Prolific	186	156	1,314	1,192	3,320	1,234
9	Sample	279	62	1,141	648	3,994	1,225
10	Fountain	201	434	1,452	415	3,112	1,123
11	Clyde	93	46	1,141	467	3,631	1,076
12	Glen Mary	155	139	1,245	985	2,697	1,044
13	Marie	....	15	1,245	519	3,216	999
14	Abington	263	248	906	233	3,216	973
15	Ridgeway	418	93	985	363	2,905	953
16	Aroma	108	62	1,407	363	2,697	927
17	Minute Man	123	135	553	858	2,516	837
18	3 Ws	155	0	429	311	3,112	801
19	Beder Wood	217	15	778	155	2,749	783
20	Chapman	139	0	622	337	2,749	769
21	Wm. Belt	170	0	1,349	33	2,282	767
22	Gandy	46	0	629	674	2,282	726
23	Van Deman	15	0	830	259	2,282	677
24	Nellie P	31	0	560	694	1,867	630
25	Brandywine	310	124	387	285	1,167	455
26	Uncle Jim	186	139	129	129	1,037	324
27	Buster	232	15	248	78	882	291
	Average yield of all varieties	189	167	1,217	576	2,963	....

TREE FRUITS.

APPLES.

The apple crop was a great success this season. The larger apples gave good results, several varieties fruiting for the first time. The crabs and cross-bred apples gave particularly satisfactory yields. In the new dry land orchard started this season over 2,000 seedlings of different varieties of apples from 2 to 4 years old were set out. A small orchard of named varieties was set out also. The following are varieties which fruited and the highest yield from one tree of the variety named:—

	Lb.
Large apples—	
Charlamoff	14
Yellow Transparent	60
Milwaukee	57
Dudley	6
Navan	4
Patten Greening	70
Minnesota Hybrid	4
Wealthy	½
Hibernal	5
Excelsior	48
Okabena	14
Winter Rose	7
Duchess	43
Rupert	3
Longfield	2
Simbirsk	2
Roslin	4
Cross-bred apples—	
Bow	61
Norman	144
Pioneer	121
Mecca	149
Silvia	150
Magnus	245
Jewel	155
Robin	162
Prince	81
Tony	160
Crab apples—	
Cottage	38
Transcendent	40
Florence	140
Dartt	6

PLUMS.

A number of selected Manitoba plum seedlings were planted out in 1912 and several bore fruit this year for the first time.

EXPERIMENTAL STATION, LACOMBE, ALTA.

G. H. HUTTON, B.S.A., SUPERINTENDENT.

The season of 1915 proved one of the most satisfactory years possible from the viewpoint of the horticulturist. When growth of trees and shrubs started in the spring, no winter injury was shown, and as the minimum temperature recorded was only—25·1 F., it is scarcely necessary to state that all trees and shrubs came through in good condition.

Cultivation of the land began on April 5, with the soil in good condition for work. The latest spring frost occurred on May 22, and the period from then to September 13, when the first frost of the fall was recorded was seasonable both as to precipitation and temperature.

The lawns of Kentucky blue grass made a splendid showing as there was continuous new growth due to the liberal rainfall. Trees and shrubs made satisfactory progress and ripened their wood fairly well prior to the killing fall frosts. The hedges planted during the past three years are now making a creditable showing and create a keen interest on the part of visitors. The flower border produced a luxuriant growth of foliage and bloom and was much admired during the entire growing season, the tulips being particularly attractive.

ORCHARD.

The fact that for three years in succession crab-apples have been produced here is evidence that it will be possible to produce standard apples when varieties of this class of fruit are produced which are equally suitable to the vagaries of this climate as are the cross-breds and some of the crab-apples. The argument is repeatedly advanced by those who consider that apples will never be grown in this section of the West that the late spring frosts will almost invariably kill the apple blossom and that for this reason alone we cannot expect to produce standard apples here. The answer to this argument is conclusive and it is only necessary to refer to the records of the past three years, which show the production of crab-apples, to effectively minimize the force of this argument. The following varieties of cross-bred apples fruited during the past year: Charles, Prince, Pioneer, Eve, Robin, Jewel, Progress, Aurora, Alberta.

Though the fruit is small, the texture is fine and since there would appear to be a relatively large percentage of water in the fruit, it is admirably adapted to the production of high quality jelly.

The apple seedlings to the number of about 6,000 have made satisfactory growth during the past year. It is the intention to thin the least promising of these seedlings from the nursery row during the coming spring. This thinning will permit of the fruiting of the balance of these trees in the nursery row where the hardiness is being established and will permit of testing the quality of the fruit with the least possible labour. The varieties of apples from which these seedlings have been produced include the following: August, Anis, Anisim, Anis Rose, Antonovka, Baraboo, Blushed Calville, Bogdanoff, Charlamoff, Grandmother, Hibernal, Hoadley, Iowa, Beauty, Lowland Raspberry, Moscow Pear, Patten Duchess.

The growth of the wind-break to the north of the orchard is providing much needed protection and during the past season wind-breaks of laurel-leaved willow have been planted east and west across the orchard at intervals of about 150 feet. The rapid growth of the laurel-leaved willow will insure the development of a satisfactory wind-break at these rather close intervals within the next four years. The most promising sorts of standard apples and varieties which we expect will fruit under satisfactory conditions as to protection by wind-breaks are: Hibernal, Blushed Calville, Yellow Transparent, Charlamoff, Antonovka.

PLUMS AND CHERRIES.

We have again to report no success in the production of fruit of either plums or cherries. Even during the past comparatively mild winter, the plum trees native to Manitoba showed winter injury here. It is apparent that this injury does not result from low temperatures but is caused in our opinion by the rapid evaporation due to our relatively dry atmosphere for which the limited precipitation of the fall of the year does not provide.

SMALL FRUITS.

CURRANTS.

Currant bushes have been injured apparently by the attack of a fungous disease known as *Nectria cinnabarina,* Fr. It is claimed that the disease is saprophytic and not parasitic; that it develops after the death or injury of the bush due to other causes. From the fact that the disease may appear on a part of the bush only and that the other branches, which seem vigorous at the time the fungus first makes its appearance in the other parts of the bush, will quickly decline in vigour until the entire bush is affected, it would appear to warrant the conclusion that the disease, though it may attack weakened bushes, will hasten the destruction of the currant plantation by its establishment therein. We believe that maintaining the vigour of the plantation through fertilizers and proper pruning, the disease may be prevented from obtaining a foothold. All affected bushes should be removed.

The currant maggot (*Epochra canadensis*) has also made serious attacks on the red and black currants here during the past year. It would appear that there is no very practical method of controlling this pest since the only recommendation made for control is to remove the surface three inches of soil beneath the bushes and replace this with fresh earth. The soil which has been removed may either be buried deeply or the puparia contained in it may be destroyed by the use of a strong solution of Kreso Dip.

The plantation of currants set in 1914 made a good growth during the season and produced a fair yield of fruit of large size and good quality. The varieties of black currants in this plantation heading the list this year are: Ogden, Climax, Merveille de la Gironde, Kerry, Beauty.

Those varieties which lead taking the average of the previous four years are: Beauty, Merveille de la Gironde, Magnus, Lee Prolific.

RED CURRANTS.

The red currant bushes do not make as rapid growth as do those of the black varieties, therefore the yield of red currants in the new plantation this year does not compare favourably with that secured from the black varieties.

The following table shows the yield from three bushes of each variety for 1915 together with the yield since 1911 and the average for five years:—

Variety.	1911.		1912.		1913.		1914.		1915.		Average.	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Cumberland Red	1	3½	10	4	5	8	3	8	7	8	5	9½
Victoria	2	13	17	8	2	5	1	2	....		6	3
Frauendorfer	3	10½	7	8	....		....		....		5	9¼
Red English		8½	4	0	5	0	5	13	....		5	13
Red Dutch		10	10	4	17	8	14	6	7	14	12	00
Prince Albert	1	00½	24	12½	19	14	40	00	19	15	21	02
Rankins Red	1	3	6	9	14	6	23	15	10	13	11	6
Fay Prolific	6	5½	13	13	1	10		8	....		5	9
Champagne Red	2	2	6	6	3	11	3	12	....		3	15
La Conde	4	15½	11	10	9	00	9	2	7	15½	8	08½
Benwell	3	6½	11	7	12	14	7	10	....		8	14
Wilder	....		11	00	1	7	3	0	1	14	4	5¼
Red Dutch (new)	1	0	13	15	19	5	13	3	3	3	12	2
Pomona	1	14½	7	8	14	2	3	12	13	8	8	2½
Long Bunch Holland		8	16	12	26	14	18	11	....		15	10
Raby Castle		4	7	6	4	8	9	14	2	14	4	15½
Moore Seedling	4	12	1	6	4	0	15	6	14	7	7	15¾
Early Scarlet	7	7½	2	10	4	1	3	7	7	8	5	00¼
Red Grape	1	4½	4	1	6	14	8	15	6	14	5	9½
Large Red	2	7	10	15	10	00	1	3	....		6	2
Wentworth Leviathan	....		6	3	7	4	2	4	....		5	4

WHITE CURRANTS.

The white currants are located in that part of the plantation most affected by the Currant Maggot and therefore the yield for 1915 is poor. The varieties White Pearl and Climax White gave the largest yield.

GOOSEBERRIES.

The most satisfactory crop of gooseberries yet produced was grown during the past season. Considering the size of the bushes the yield was large and the quality was everything that could be desired. The bushes were covered during the previous winter with earth, as past experience has shown that winter protection of any other kind such as strawy manure is not satisfactory. The labor in covering the bush completely with earth is not as great as one who has not undertaken this work might expect, and is not so serious as to prevent any lover of this class of fruit from growing them because of the necessity for this kind of winter protection. The following table shows the yield from three bushes of each variety during the past year and indicates the rate per acre:—

GOOSEBERRIES.—Five Bushes.

Variety.	1915.		Yield per acre.	
	lb.	oz.	lb.	oz
Queen Anne	5	2	1,511	14
Smith Improved	3	10	1,130	1
Silvia	7	8	2,212	6
Richland	2	3	645	12
Carrie	5	0	1,476	00
Downing	1	8	451	00
Houghton	15	4	4,499	12

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RASPBERRIES.

The raspberry plantation produced a fair crop of excellent fruit in 1915. The canes showed no injury from any cause. The fruit was large and the yield was such that any one interested in this line of work would be justified in undertaking the production of raspberries in a commercial way and expecting a very satisfactory return on the basis of the yields secured here this year.

The following table shows the yield from forty hills for 1915, that for 1914, and the average for the two years:—

Variety.	1914.		1915.		Average.	
	lb.	oz.	lb.	oz.	lb.	oz.
Loudon	21	8½				
King	22	5½	15	11	19	0¼
Sarah	24	12	23	8	24	2
Shaffer (Colossal)			3	12		
Herbert	1	11	32	00	16	13½
Golden Queen	8	7	4	7	6	7
Sunbeam	8	3	15	7	11	13
Cuthbert	4	15				
Marlboro	7	00	12	6	9	11
Chegwin			5	12		

STRAWBERRIES.

The stand of strawberry plants secured in 1914 was such that a very satisfactory yield of fruit was secured during the past season. The varieties Senator Dunlap, Haverland and Beder Wood have given the best general satisfaction for the past few years. The following extract from the Report for the year ending March 31, 1915, is quoted because it appears to give a fair statement of the difficulties to be met with in the growing of strawberires, particularly in exposed locations:—

> "From our experience during the last few years, we are led to believe that it may prove advisable to defer transplanting till towards the end of May, or until the rainy season opens. The dry windy weather, so common early in May, renders it difficult to get the young plants to root uniformly. A second difficulty has been met in rooting the runners in the fall. Again at this season of the year the weather is usually dry and occasionally windy, and, frequently, the plants are blown about to such an extent that a callous is formed where the young roots should be thrown out. This condition is best offset by fastening the runners down at the point where the young plant is developing, with a forked branch of willow or with a wire staple such as is used for fencing."

The following everbearing varieties have produced at the rate of about 3,000 quarts per acre: Americus, Model, Progressive, Iowa.

The chief advantage of the everbearing varieties consists in the fact that they produce fruit out of season for ordinary varieties. The Americus, Progressive, Model, and Iowa are the varieties fruiting and the order in which they have been named is the order of their yield.

VEGETABLES.

The season was favourable to the production of a good yield of most vegetables and the quality has been fully up to the usually high standard of this class of crop in Western Canada.

BEANS.

A fairly large number of varieties of beans were grown, the seed being sown in the open on May 31. The yields shown are from one row 30 feet in length. The dates when the different varieties were ready for the table are also given, together with the average (when available) for the past five years:—

Variety.	Ready for use.	1915.		Average for 5 years.	
		lb.	oz.	lb.	oz.
Refugee or 1000 to 1	Aug. 18	43	3	15	03
Extra Early Valentine	“ 15	20	4		
Extra Early Refugee	“ 16	17	8	15	15½
Bountiful	“ 18	14	0	26	8
Fordhook Favourite	“ 18	10	9		
Wardwell Kidney Wax	“ 13	7	0	9	5
Grennell Rustless Wax	“ 18	6	10	12	11½
Valentine Wax	“ 16	5	1	11	12

An experiment similar to that carried on with peas was conducted with beans. Stringless Green Pod, Refugee or 1,000 to 1, Early Red Valentine and Round Pod Kidney were sown April 19 and at intervals of one week up to May 10. The yield from the rows first planted was 48 pounds greater than from rows sown last, which is further evidence of the advisability of early planting even though the danger of frost is incurred.

BEETS.

Six varieties of beets were sown on May 13 in rows 30 feet in length. Weather conditions did not check the growth of beets as has sometimes been the case here and the varieties named were ready for use on July 24. The table following shows the yield for 1915, together with the average (when available) for the past five years:—

Variety.	1915.		Average for 5 years.	
	lb.	oz.	lb.	oz.
Eclipse (4 year)	106	00	80	07
Ruby Dulcet	90	00	65	14
Cardinal Globe	79	00		
Crosby Egyptian	74	00		
New Meteor	69	00	59	8
Black Red Ball	43	8	42	02½

LACOMBE.

CABBAGE.

The largest number of varieties of cabbage grown thus far were seeded in 1915 and the yield proved quite satisfactory. There was some injury from cutworm, but this was not so serious as to interfere to any extent with the yield. The following table gives the results for the past season and the average yield from ten heads of these varieties for the past five years in every instance where a variety has been grown for that length of time:—

Variety.	1915.		Average weight of ten heads for 5 years.		
	Weight of ten heads.				
	lb.	oz.	lb.	oz.	
Fottler Improved Brunswick	82	14	81	05	(4 yr)
Nofalt	84	01	..	..	
Copenhagen Market	78	11	123	01¼	
Improved Amager Danish Roundhead	73	15	92	02½	
Flat Swedish	71	12	101	12	
Extra Amager Danish Roundhead	66	3			
Danish Summer Ballhead	45	10	73	02	
Early Jersey Wakefield	30		64	14	
Early Paris Market	28	2	62	15	(4 yr)

RED CABBAGE.

Variety.	1915.		Average for 5 years.		
	lb.	oz.	lb.	oz.	
Danish Stonehead	37	4	34	5	
Danish Delicatesse	53	1	44	5½	(4 yr)

CELERY.

Seed of eight varieties of celery was sown in the hotbed on May 4, pricked out into the cold frame on June 7 and each seeded in the open on July 20. The growth of celery was not as satisfactory as many of the other vegetables and the size of the heads produced was comparatively small. The table given herewith shows the yield for 30 plants for the past five years, and the average for that period.

Variety.	1911		1912		1913		1914		1915		Average weight of 30 plants for 5 years.	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Evans Triumph	19	00	37	00	38	00	44	00	14	06	30	07½
Giant Pascal	21	00	43	00	35	00	33	00	15	10	29	08
Noll Magnificent	18	00	34	00	37	00	40	8	12	09	28	06½
French Success	14	00	37	00	31	00	24	00	14	00	24	00
White Plume	..	..	..	..	21	00	29	00	10	08	20	03
Paris Golden Yellow	5	00	16	00	19	00	14	08	10	08	13	00
Improved White Plume	..	..	..	..	..	..	12	08	13	00	12	12

CAULIFLOWER.

Success with cauliflower during the past season was also not particularly marked, though there were a number of very fair-sized heads and the first were ready for use a month earlier than in 1914. The two earliest varieties were Early Snowball and Improved Dwarf Erfurt. From the experience of other years these varieties can be recommended as being the best sorts.

CARROTS.

Seed was sown in the open on April 17, and the vegetables were ready for use on July 7. Improved Nantes and Improved Danvers Half Long were the two earliest varieties, while Half Long Chantenay produced, as usual, one of the most satisfactory yields.

An experiment was carried on with carrots in which thinning to different distances apart was tried, and the table below gives the yield from a row 33⅓ feet in length.

	Distance Thinned.		
	1″.	2″.	3″.
Variety.	Lb.	Lb.	Lb.
Chantenay	99	90	80

CORN.

It is the exception rather than the rule here that two seasons in succession should be favourable for corn. Seed of the following varieties was planted on May 7: Malakoff, Early Malcolm, Early Fordhook, Pocahontas, Extra Early Market, Early Iowa, White Squaw, Extra Early Adams, Golden Bantam, Metropolitan, Early Dawn.

The varieties were ready for use on the table in the following order:—

August 21—White Squaw, Early Dawn, Extra Early Adams.
September 8—Pocahontas.
" 9—Metropolitan.
" 11—Extra Early Market, Early Fordhook, Early Iowa.
" 12—Golden Bantam.
" 14—Early Malcolm.

CUCUMBERS.

The following varieties of cucumbers were sown in hills on May 5: Extra Early Russian, Prize Pickle, Fordhook Famous, Giant Pera, Davis Perfect, Cool and Crisp, Peerless, Improved White Spine.

A satisfactory growth of most varieties was made and while no fruit was ripened, it was far enough advanced for the making of good quality pickles. Improved White Spine and Giant Pera were the best yielders.

LETTUCE.

Seed of the following varieties of lettuce was sown in the open on April 13: Iceberg, Grand Rapids, Improved Hanson, Giant Crystal Head, Simpson Black Seed, Cos Trianon, Dreer All Heart.

They were practically all ready for use by the end of June, but the quality of the varieties differed widely, Dreer All Heart, Iceberg, Giant Crystal Head being among the best varieties.

ONIONS.

Seed of the following varieties of onions was sown in the open on May 13, and all of each produced a very satisfactory crop: Very White Pearl, Early White Barletta, White Queen, Australian Brown, Early Red Flat, Yellow Globe, Red Globe, White Globe, Yellow Globe Danvers, Red Wethersfield, Extra Early Red, Johnson Dark Red Beauty, Giant Red Wethersfield.

LACOMBE.

The following table shows the relative earliness of these varieties together with the yield from a row 30 feet long of each, they being named in the table in the order of their production.

Date ready for use.	Variety.	Yield.	
		lb.	oz.
July 26	Yellow Globe	40	00
" 26	White Globe	33	08
" 26	Red Globe	33	00
" 24	Early Red Flat	32	08
" 26	Giant Red Wethersfield	32	08
" 24	Extra Early Red	32	00
" 28	Yellow Globe Danvers	32	00
" 24	White Queen	31	08
" 26	Johnson Dark Red Beauty	31	00
" 28	Red Wethersfield	30	00
" 24	Early White Barletta	22	00
" 28	Australian Brown	14	00
" 24	Very White Pearl	11	08

Three varieties of onions, Extra Early Red, Large Red Wethersfield and Yellow Globe Danvers were used in the following three tests:—

1. Grown from seed sown in the open and thinned to one, two and three inches apart.

2. Grown from young plants started in the hotbed and transplanted to open ground.

3. Onion sets grown from seed.

The following table gives the yield from a row 33⅓ feet in length:—

Variety.	Thinned to					
	1"		2"		3"	
	lb.	oz.	lb.	oz.	lb.	oz.
Large Red Wethersfield	24	00	21	08	15	00
Yellow Globe Danvers	25	08	21	00	16	00
Extra Early Red	31	04	21	00	15	08

Grown from seed sown in the open. Yield from one row 50 feet in length.			Grown from seed sown in the hotbed and transplanted. Yield from one row 50 feet in length.		
Variety.	Yield.		Variety.	Yield.	
	lb.	oz.		lb.	oz.
Large Red Wethersfield	33	00	Large Red Wethersfield	39	00
Yellow Globe Danvers	31	00	Yellow Globe Danvers	40	08
Extra Early Red	28	00	Extra Early Red	58	00

LACOMBE.

Grown for sets from seed:—

Variety.	Yield of sets from one row 100 feet in length.	
	Lb.	oz.
Large Red Wethersfield	128	00
Yellow Globe Danvers	103	00
Extra Early Red	98	00

The seeding of onions in rows one foot apart with 200 seeds to the foot gave a remarkable yield of onion sets of the following varieties: Large Red Wethersfield, Yellow Globe Danvers.

At six cents per pound the yield of sets would be worth at the rate of $3,000 per acre.

PARSNIPS.

Two varieties of parsnips were grown, Hollow Crown and Vaughan Intermediate. Both were large enough for use on July 29, and both are satisfactory as to yield.

An experiment similar to that carried on with carrots was conducted in which the parsnips are thinned to different distances apart. The following table gives the yield from a row 33⅓ feet in length:—

Variety.	Distance Thinned.		
	1"	2"	3"
Hollow Crown	72 08	75 00	63 00

PEAS.

Sixteen varieties of peas were tested in 1915, each in one row 30 feet long. Seed was sown in the open on May 19. The following table arranged in order of yield also shows the relative earliness of these varieties. There is no garden crop which succeeds better than peas under the soil and climatic conditions here, and in no year has there been a failure of this crop and the quality is all that could be desired.

Date. ready for use.		Variety.	Yield. green pods	
			Lb.	oz.
Aug.	3	Advancer	29	14
July	29	Telephone	29	06
Aug.	3	Lincoln	28	00
July	24	Gradus	22	08
"	15	Thomas Laxton	20	08
Aug.	8	Stratagem	19	12
July	24	Early Giant	16	00
Aug.	7	Juno	15	14
July	15	Gregory Surprise	14	10
"	24	English Wonder	14	01
"	24	American Wonder	13	05
Aug.	3	Heroine	11	00
"	3	Dainty Duchess	8	08
July	24	Premium Gem	7	13
Aug.	3	Quite Content	7	08
July	26	Sutton Excelsior	6	00

LACOMBE.

Gradus, Advancer, Improved Stratagem and Thomas Laxton varieties of peas were planted on the 19th of April. Gradus, the earliest of these, was ready for use July 14, while the latest variety, Improved Stratagem was ready for use August 7. The variety Thomas Laxton was planted on April 19 and at intervals of one week for four weeks. The planting of a succession of varieties produced peas ready for use for a longer time than the same variety planted at weekly intervals. The four varieties came into use over a period of twenty-three days, while the one variety planted twenty-eight days apart produced peas ready for use only fourteen days later than those from the first planting.

LEEKS.

Two varieties of leeks were planted in rows thirty feet in length and produced as indicated below:—

English Flag	41 pounds.
French Carenton	53 "

PUMPKIN.

Three varieties of pumpkin were planted on June 26, the varieties being Sweet as Sugar, Jumbo and Large Field.

RADISH.

Radishes may always be counted on to make a good growth and to be ready for use on the table early in the season. Scarlet Turnip White Tipped is one of the best varieties and can be recommended for table use. This variety was ready for use on May 17.

RHUBARB.

The following varieties of rhubarb are under test at this Station: Paragon, Prima Donna, Victoria, Early Scarlet, Tolbosk, Excelsior, Queen, Royal Albert, Daw Champion, Early Raspberry, Hobday Giant, Linnaeus, Monarque.

The table following gives the varieties in the order of their yield and the relative earliness of same and the yield from 10 plants:—

Date.	Variety.	Yield. Lb. oz.
May 8	Victoria	89 13
" 10	Early Scarlet	74 10
" 8	Paragon	55 10
" 16	Prima Donna	51 00
" 8	Hobday Giant	49 00
" 19	Tolbosk	33 00
" 18	Queen	28 15
" 8	Linnaeus	21 00
" 18	Royal Albert	19 12
" 8	Daw Champion	19 10
" 8	Early Raspberry	19 05
" 10	Monarque	17 08

SALSIFY.

Though only one variety, Long White, was grown from seed sown in the open on May 13, it made a vigorous growth and was ready for use on July 24.

LACOMBE.

SQUASH.

The following varieties of squash and vegetable marrow were tested: Delicious, Early White Bush Scallop, Delicata, Long White or Vegetable Marrow, Long White Bush Marrow, Golden Hubbard, Summer Crookneck.

Of these varieties the Long White Bush Marrow gave the highest yield with the Delicata Squash standing second. None of these varieties obtained full maturity though they were sufficiently far advanced to be suitable for use on the table.

TOMATOES.

Eleven varieties of tomatoes were sown in 1915. A large crop of green fruit was being carried when the frost of September 13 prevented further development.

TURNIPS.

Eight varieties of turnips for table use were planted in heavy black loam soil in 1915, and all were ready for use on August 26. The following table gives the yield of varieties from a 30-foot row:—

Variety.	Yield.	
	Lb.	oz.
Swede Favorite	101	00
Westbury	87	08
Sutton Champion	85	08
Bangholm Purple Top	85	00
Skirving	84	08
Hall Westbury	80	00
Invicta	79	00
Best of All	70	00

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POTATOES.

Thirty-one varieties of potatoes were tested out at this Station in duplicate uniform test rows each 66 feet in length. The sets were placed 1 foot apart in rows 2½ feet apart. All varieties were planted May 18 and harvested October 7. The land on which these were grown was broken from scrub in 1913 and grew wheat in 1914 without being backset.

The sprouted varieties were put to sprout in a light place on May 5 and planted on June 3. When planted they came up several days in advance of those not sprouted and showed superior vigour throughout the growing period. The yield was considerably above that obtained from the same varieties which were not sprouted.

Variety.	Date planted.	Date harvested.	Total Yield per acre.		Percentage Marketable.	Percentage non-Marketable.	Form and colour.
			Bush.	lb.			
Table Talk (Sprouted)	May 18..	Oct. 7..	484		89	11	Round, white.
Epicure	“ 18.	“ 7..	448	48	82·7	17·3	Round, white.
Houlton Rose	“ 18.	“ 7..	446	36	87·8	12·2	Half long, pink.
Early Hebron	“ 18.	“ 7..	440		90·8	9·2	Half long, pink.
Early Ohio (Sprouted	“ 18..	“ 7..	431	12	91·2	8·8	
Rawlings Kidney, (Ashleaf Kidney)	“ 18..	“ 7..	429		92·3	7·7	Round, white.
Empire State	“ 18..	“ 7..	426	48	84·6	15·4	Long, white.
British Queen	“ 18..	“ 7..	426	48	90·4	9·6	Half long, white.
Early Norther	“ 18..	“ 7..	422	24	87·1	12·9	Half long, red.
American Wonder	“ 18..	“ 7..	418		87	13	Half long, white.
King	“ 18..	“ 7..	415	48	88·9	11·1	Half long, white.
Country Gentleman	“ 18.	“ 7..	409	12	87·3	12·7	Half long, pink.
New Queen	“ 18..	“ 7..	398	12	89	11	Half round, pink.
Money Maker	“ 18..	“ 7..	391	36	88·8	11·2	Long, white.
Morgan Seedling	“ 18..	“ 7..	389	24	89·4	10·6	Long, pink.
Late Puritan	“ 18..	“ 7..	385		88·6	11·4	Half long, white.
Table Talk	“ 18..	“ 7..	378	24	91·2	8·8	Round, white.
King Edward 7th	“ 18..	“ 7..	327	48	83·6	16·4	Half round, white, pink eye
Wee MacGregor	“ 18..	“ 7..	327	48	92·1	7·9	Round white.
Holborn Abundance	“ 18.	“ 7..	325	36	85·3	14·7	Round, white.
Rochester Rose	“ 18..	“ 7..	323	24	83·4	16·6	Half round, pink.
Carman No. 1	“ 18.	“ 7..	316	48	91·8	8·2	Half long, white.
Gold Coin	“ 18..	“ 7..	316	48	89·9	10·1	Half round, white.
Early Ohio	“ 18.	“ 7..	299	12	85·8	14·2	
Dreer Standard	“ 18.	“ 7..	290	24	90·1	9·9	Half round, white.
Irish Cobbler	“ 18..	“ 7..	286		86·	14·	Round, white.
Vick Extra Early	“ 18..	“ 7..	277	12	92·4	7·6	Round, white.
Hard to Beat	“ 18..	“ 7..	220		81·	19	Half long, white.
Dalmeny Beauty	“ 18..	“ 7..	220		64·9	35·1	Half long, white.
Cow Horn	“ 18..	“ 7..	213	24	69	31	
S. A. Frostproof	“ 18..	“ 7..	187		76·9	23·1	Half long, red.

LACOMBE.

COST OF PRODUCING AN ACRE OF POTATOES.

The following table shows the time spent in the various operations in producing an acre of potatoes during the season of 1915 at this Station:—

May	12—Double harrowing, 1 man and 4 horses..	hrs.	1
"	13—Furrowing, 1 man and team..	"	2½
"	13—Covering, 1 man and team..	"	2½
"	13—Planting, 2 men..	"	10
"	13—Cutting potatoes, 1 man..	"	8
"	20—Packing, 1 man and 2 horses..	"	1
June	4—Harrowing, 1 man and team..	"	1
"	22—Harrowing, 1 man and team	"	1¼
Oct.	5—Digging, 1 man and 4 horses..	"	2¼
"	5—Digging, 8 men..	"	7½
"	5—Hauling, 2 men and team..	"	4

Cost Items.

1 man and 4 horses, 3¼ hours..	$ 1 56
1 man and 2 horses, 12¼ hours..	4 17
1 man and 1 horse, 2¾ hours..	74
Manual labour, 98 hours..	19 60
Formalin used on seed..	1 25
Seed used, 22 bushels at 50 cents..	11 00
Rent of land..	2 00
Total cost..	$ 40 32
Cost to produce and put in cellar per bushel..	14·66
Returns, 1,650 pounds at 40 cents per bushel..	110 07
Profit on 1 acre..	69 75

An experiment was conducted with cutting the sets to one, two, and three eyes and planting whole small potatoes. The yields below were secured from rows each 66 feet long and the rate per acre in bushels and pounds is also shown:—

	American Wonder Yield from 66 sets.	Gold Coin Yield from 66 sets.	Average weight 66 sets planted.		Average yield per acre.	
	lb.	lb.	lb.	oz	Bush.	lb.
Whole Potatoes..............................	92	85	5	15	389	24
Sets cut to 3 eyes..	112	72	3	09	404	48
Sets cut to 2 eyes..	43	70	4	09½	248	36
Sets cut to 1 eye..	98	74	5	15¼	378	24

One row each of Table Talk and Early Ohio potatoes was planted on five different dates two weeks apart. The sets were carefully weighed and counted each time and planted under the same conditions as far as possible in order that the variation in yields other than that occasioned by the dates of planting would be at a minimum.

Date planted.	Table Talk.	Early Ohio.	Average yield per acre.	
	lb.	lb.	Bush.	lb.
May 5..	116	100	475	12
" 19..	104	84	413	36
June 3..	64	36	220	00
" 16..	42	44	189	12
" 30..	27	38	141	40

FLOWER GARDEN.

The following varieties of annuals were sown in the hotbed on April 7. The bloom continued until the severe frost of September 13:—

—	In Bloom.	
	From	To.
Abronia umbellata	August 18	Sept. 12
Alyssum, Little Dorrit	" 13	" 12
Antirrhinum, 11 varieties	" 24	" 12
Asters, 29 varieties	" 22	" 12
Balsam, Improved Camellia Flowered	" 20	" 12
Bartonia aurea	" 20	" 12
Browallia	" 21	" 12
Carnation	" 1	" 12
Chrysanthemum	" 13	" 12
Coreopsis	" 20	" 12
Dahlia	" 28	" 12
Dianthus Heddewigii	" 26	" 12
Dimorphotheca	" 12	" 12
Daisy	" 30	" 12
Eschscholtzia	" 13	" 12
Gaillardia	" 28	" 12
Geranium, 6 varieties	" 16	" 12
Larkspur, 3 varieties	" 26	" 12
Lavatera rosea splendens	" 16	" 12
Leptosiphon hybridus	" 16	" 12
Linum	" 26	" 12
Lobelia, 2 varieties	" 26	" 12
Lupinus	" 13	" 12
Marigold, 2 varieties	" 20	" 12
Mimulus	July 12	" 12
Mignonette	Aug. 6	" 12
Nasturtium, 9 varieties	" 9	" 12
Petunia, 3 varieties	" 20	" 12
Phlox, 7 varieties	" 16	" 12
Portulaca	" 22	" 12
Rudbeckia	" 26	" 12
Salvia, Snowball	" 28	" 12
Salpiglossis, 2 varieties	" 26	" 12
Scabious	" 31	" 12
Schizanthus	" 16	" 12
Stock, 7 varieties	" 13	" 12
Swan River Daisy	" 16	" 12
Sweet Sultan, 2 varieties	" 23	" 12
Tagetes signata pumila	" 16	" 12
Verbena, 3 varieties	" 26	" 12
Viscaria cardinalis	" 3	" 12
Zinnia, 2 varities	" 24	" 12

The following varieties of Everlasting were tested:—

—	In Bloom.	
	From.	To.
Acroclinium	Aug. 10	Sept. 12
Helichrysum	" 26	" 12

LACOMBE.

Seventy varieties of sweet peas were tested here in 1915 and were planted on April 12. The following varieties are named as representing superior sorts of the various shades:—

Queen Alexandra	Crimson.
Helen Pierce	Marbled blue.
Miss Wilmott	Salmon pink.
Mrs. Collier	White.
Rose du Barri	Scarlet.
John Ingman	Blush.
Mrs. Routzahn	Primrose.
Clara Curtis	White.
King Manoel	Maroon.
Princess Mary	Blue.
Mrs. Cuthbertson	White—pink edge.
Irish Blue	Mauve.

The following varieties of herbaceous perennials produced bloom during the past year:—

Aquilegia alpina superba.
Aquilegia cœrulea hybrida.
Dianthus deltoides glaucus.
Hesperis matronalis.
Papaver orientale Goliath.
Papaver orientale Queen Alexandra.
Papaver orientale Royal Scarlet.
Polemonium himalaicium album.
Polemonium Richardsonii.

Eight varieties of gladioli were planted in 1915, on May 5, the variety Willy Wigman being the only one producing bloom.

The following varieties of pæonies produced bloom during the past season: Eclatante, Louis Van Houtte, *Globosa grandiflora,* Delaelin, Edulis, Baronne James de Rothschild, Victor Lemoine, Charles van Geart.

DAFFODILS.

Daffodils of the following varieties produced bloom in 1915:—

—	In Bloom..	
	From	To.
Horsfieldii	May 27	June 22
Victoria	" 29	" 19
Sir Watkin	" 27	" 19
Emperor	" 27	" 21

TULIPS.

Thirty-one varieties of tulips were grown during the past season and produced splendid bloom:—

	Height Inches.	In Bloom.	
		From.	To.
Late Singles, including Darwins.			
York and Lancaster	6	June 12	June 25
Gesneriana Spathulata	12	“ 12	“ 25
Isabella	8	“ 7	“ 25
La Merveille	10½	“ 12	“ 28
Rose Pompon	9	“ 7	“ 25
Parrot, Perfecta	8	“ 10	“ 25
Picotee	10	“ 10	“ 30
The Fawn	11	“ 10	“ 25
Inglescombe Yellow	11	“ 12	“ 25
Clara Butt	8½	“ 12	“ 25
Madame Krelage	8½	“ 7	“ 25
Farncombe Sanders	9	“ 10	“ 25
Suzon	12	“ 10	“ 25
Isis	11	“ 10	“ 25
Baron de la Tonnaye	16	“ 14	“ 25
Bartigon	7½	“ 10	“ 25
Pride of Haarlem	10	“ 7	“ 19
Edmee	13	“ 10	“ 19
Europe	12	“ 7	“ 25
Late Doubles.			
Mariage de ma fille	10	June 15	June 25
Early Singles.			
Joost van Vondel	8	May 15	May 31
Couleur de Cardinal	8	“ 30	June 12
Proserpine	9½	“ 19	“ 6
Keizerskroon	8½	“ 26	“ 14
Standard Royal Silver	5	“ 31	“ 15
Early Doubles.			
Murillo	7½	May 29	June 19
Imperator Rubrorum	9½	“ 19	“ 14
Couronne d'Or	7	“ 25	“ 15
Alba Maxima	6½	May 29	June 19
Helianthus	5½	“ 25	“ 6
Paeony Rose	6½	June 12	“ 25

TREES AND SHRUBS.

The few vacancies occurring among the ornamental trees and shrubs were filled when the planting of 1915 was done. During the past season tree growth has been unusually free and if the severe winter just experienced has no injurious effects upon them, this unusual growth will advance the trees further than any previous year.

The large number of evergreens planted on the grounds is rapidly improving the general appearance of the place and though the growth of these is not rapid here they are not showing winter killing and in a few years will present a very pleasing picture.

Laurel-leaved willow continues to show itself hardy while the willow, *Salix daphnoides acutifolia* is probably the best willow for use in the planning of windbreaks in this region.

Lacombe.

EXPERIMENTAL STATION, INVERMERE, B.C.

REPORT OF THE SUPERINTENDENT, G. E. PARHAM.

THE SEASON.

The season of 1915 was exceptionally favourable. The spring opened earlier than usual, and by the end of March the land had been cultivated, and the bush fruits and apple trees were in course of being pruned.

There was a long dry spell after the snow disappeared, and the high winds caused the light soil to drift considerably. This condition, however, was remedied by over 1 inch of rainfall on the 29th and 30th of April, and from that date there was an abundant precipitation. Light showers in May, nearly four inches in June, and almost the same amount in July made irrigation unnecessary until August. There was a severe frost on the night of May 29, which did considerable damage to the early potatoes, young cabbage, etc. With this exception the conditions were most favourable throughout the season.

The weather in the fall was such as enabled the harvesting of the various garden crops in good condition.

VEGETABLES (VARIETY TESTS).

Asparagus.—The asparagus planted in 1913 continues to make satisfactory growth. A few bunches only were cut this season, and a liberal dressing of barnyard manure has been again applied.

Beans.—Ten varieties were tested. They were sown on May 13 in rows 30 feet long. No irrigation was required.

Variety.	Ready for use.	Total Yield.
		lb.
1. New White Seeded Stringless	Aug. 3	32
2. Bountiful Green Bush	Aug. 1	45
3. Grennell Rustless Wax	July 26	35
4. Refugee or 1000 to 1	July 26	41
5. Round Pod Kidney	Aug. 1	36
6. Stringless Green Pod	Aug. 4	50
7. Valentine Wax	Aug. 1	40
8. Wardwell Kidney Wax	July 23	28
9. Extra Early Valentine	Aug. 4	50
10. Extra Early Refugee	Aug. 7	48

It is perhaps noteworthy that varieties 9 and 10, described as "Extra Early" are, under local conditions, the latest in maturing of any varieties tested.

Beets.—Were sown in rows 30 feet long on April 28, thinned June 8, and were ready for use on July 17.

Variety.	Yield per 30′ row.	Remarks.
	lb.	
1. Ruby Dulcet	115	Rather large, but clean rooted.
2. Rennie Cardinal Globe	105	Large and coarse.
3. Eclipse	110	Rather coarse.
4. New Meteor	80	Good shape medium size and clean rooted.
5. New Early Black Red Ball	90	Good shape, medium size
6. Crosby Egyptian	100	Large coarse.

Brussels Sprouts.—"Dwarf Improved" were again tested and gave excellent results.

Cabbages.—Eleven varieties were tested being sown in the open on May 3. All varieties germinated well but they were soon affected with Cabbage Maggot. "Paris Market" was the earliest as well as one of the best varieties grown, being ready for use by July 22 and followed on the 28th by the Early Jersey Wakefield. Three other varieties which did well were Fottler Improved, Flat Swedish and Danish Delicatesse.

Variety.	Ready for use.
1. Fottler Improved	Aug. 30
2. Improved Amager Danish Round Head	Aug. 30
3. Extra Amager Danish Roundhead	Aug. 30
4. Flat Swedish	Aug. 20
5. Danish Summer Ballhead	Aug. 30
6. Copenhagen Market	Aug. 13
7. Paris Market	July 22
8. Early Jersey Wakefield	July 28
9. Nofalt	Aug. 15

Danish Delicatesse and Danish Stonehead, two varieties of pickling cabbage, both did well.

Cauliflower.—Three varieties, Danish Giant, Early Dwarf Erfurt and Snowball were tested. They were sown in hotbed March 31, removed to cold frame April 19, planted in open May 6, and were all ready for use on July 1.

Carrots.—All four varieties tested were very good, especially Half Long Chantenay which yielded a remarkably uniform crop of clean straight roots. They were sown April 27 and thinned June 18 and gave the following yield to the 30-foot-row.

	Pounds.
1. Improved Danvers	56
2. Improved Nantes	46
3. Half Long Chantenay	100
4. Early Scarlet Horn	44

Celery.—Seven varieties were sown in the hotbed March 29, and planted out on June 12. Paris Golden Yellow was the earliest and the best variety grown, White Plume and French Success also giving excellent results.

INVERMERE.

Cucumbers.—Seven varieties were planted and, with the exception of one, "Cool and Crisp," did well. Davis Perfect was the heaviest in yield, followed by Extra Early Russian, Fordhook Famous, Giant Pera, Peerless Improved White Spine and Prize Pickle.

Corn.—Was a more successful crop than in any previous year. Fifteen varieties were sown May 14.

Name.	Height.	Description.
	Feet	
1. Early Evergreen	9	Few cobs, none ready for use.
2. White Squaw	3	Many cobs ready for use.
3. Early Iowa	5½	Many cobs in good condition for use. Best
4. Pocahontas Sweet	7	Many cobs ready for use.
5. Metropolitan Sweet	10	No cobs ready for use. (One stalk 11′)
6. Early Dawn	5	Many cobs ready for use.
7. Perkins Extra Early Market	8	Many cobs ready for use.
8. Extra Early Adams	6	Short plump cobs, many ready for use.
9. Golden Bantam	7	Small, uneven, few cobs ready for use.
10. Early Fordhook	7	Many cobs but poor coarse quality.
11. Early Malcolm	5	More cobs ready for use then any, and first to become ready.
12. Malakoff	5	Cobs small and early.
13. Stowell Evergreen	10	Heavy forage, few cobs, none ready for use.
14. Black Mexican Sugar	10	Heavy forage, exceptionally long cobs, none ready for use.
15. Country Gentleman	10	Heaviest in forage, some 11′ high.

Muskmelon and Watermelon.—Cannot be grown in open; in the cold frame they were grown with fair success.

Onions.—Were sown in the open. The crop, was an excellent one all varieties doing well. Early Red Wethersfield was the best. It was found, however, though they were harvested under favourable conditions, that a large proportion of all varieties, instead of ripening, started to rot in the neck.

Pepper.—One variety, Long Red Cayenne, was again tested, but we were again unable to bring any to maturity.

Parsnips.—Both Improved Hollow Crown and Intermediate, the two varieties tested, raised successful crops of good even roots.

INVERMERE.

Peas.—The following sixteen varieties were planted April 19:—

Variety.	Ready for use.	Height.		Remarks.
		ft.	in.	
1. Gradus	July 16	2		
2. Sutton Excelsior	July 14	1	6	
3. Stratagem	Aug. 4	2	3	
4. Gregory Surprise	July 9	2	3	Good.
5. Heroine	Aug. 4	2	6	
6. Telephone	July 26	4	6	Good.
7. English Wonder	July 13	2	0	Very good.
8. Juno	Aug. 4	2	6	
9. Dainty Duchess	July 26	6	0	Very good.
10. Quite Content	July 26	6	0	Good.
11. Early Giant	July 30	2	6	
12. Thos. Laxton	July 16	3	0	Good.
13. Lincoln	Aug. 5	2	3	Good, very suitable for late cropping.
14. American Wonder	July 11	2	0	Good.
15. Advancer	July 16	2	6	
16. Premium Gem	July 3	1	6	Good. Since all ripen together, good for sequence of sowing.

INVERMERE.

Potatoes.—The same experiments which have been conducted in past years were repeated this season. Thirty-seven varieties of potatoes are being tested and were planted May 18 in rows 66 feet in length, the sets being 18 inches apart in the rows and the rows 30 inches apart.

Variety.	Yield.			Remarks.
	Marketable.	Unmarketable.	Total.	
	lb.	lb.	lb.	
Table Talk	46	36	82	Scab.
American Wonder	55	21	76	Clean.
Bovee	49	40	89	Clean.
Burpee Extra Early	41	36	77	Scab.
Carman No. 1	38	38	76	Scab.
Conquering Hero	41	51	92	Scab.
Clyde	58	38	96	Scab.
Dalmeny Hero	21	48	69	Scab.
Silver King	48	35	87	Slight scab.
Manistee	45	39	80	Scab.
Late Puritan	66	46	112	Clean.
Irish Cobbler	59	29	88	Slight scab.
Houlton Rose	64	46	110	Scab.
Green Mountain	50	41	91	Slight scab.
Green Mountain 2	51	36	87	Clean.
Bermuda Early	22	36	58	Clean.
Scottish Triumph	29	42	71	Scab.
Empire State	41	37	78	Clean.
Eureka Extra Early	48	48½	96½	Slight scab.
The Factor	23	40	63	Slight scab.
Vermont Gold Coin	60	28	88	Clean.
Early Ohio	41	26	67	Clean.
Early White Albino	60	43	103	Clean.
Early Rose	47	42	89	Clean.
Early Six Weeks	37	50	87	Clean.
Early May	38	33	71	Clean.
Early Norther	52	31	83	Clean.
Early Hebron	73	21	94	Clean.
Dobbie Prolific	62	31	93	Clean.
Delaware	60	23	83	Scab.
Up to Date	60½	27½	88	Clean.
Pan American	57	13	70	Slight scab.
Wee MacGregor	87	34½	121½	Slight scab.
Sir Walter Raleigh	48	20	68	Slight scab.
Snow	68	21½	89½	Clean.
The Scott	49½	27½	77	Slight scab.
Table Talk	95	23½	118½	Scab.
Todd Wonder	48	6	54	Clean.
Cambridge Russet	66½	23½	90	Clean.
Reeves Rose	56½	27	83½	Clean.
Ashcroft	96	21	117	Slight scab.
Uncle Sam	64	23	87	Clean.

INVERMERE.

Tomatoes.—Twelve varieties were tested. They were sown April 22 and planted out on June 11. The following results were obtained from one plant each of the following varieties:—

Variety.	Green fruit.	Ripe fruit.	Remarks.
	lb.	lb.	
Sparkling Dewdrop	30	2	Rather poor shape.
Prosperity	36	6	Fair.
Extra Early Wealthy	30	10	Best grown this season.
Florida Special	30	4	Very fair.
Rennie XXX Scarlet Skin	21	1½	Very uneven shaped fruit.
Northern Adirondack	20	4	Good but split badly.
Bonny Best	Plant failed) not gathered.		
Johnson Jack Rose	.....	2	Uneven in size and shape
Chalk Early Jewel	24	0	No ripe fruit.
Sunnybrook Extra Earliana	29	5	Good shape and size did not split.
Alacrity 12B	24	4	Very good fruit.
Alacrity 14B	28	½	Only one ripened.

Squash.—Were planted in hills 9 feet apart, and were sown on May 10, on land prepared with a liberal application of farm manure, and produced the following average yield per hill:—

	Pounds.
Delicata	18
Delicious	36
Crookneck Summer	20
Golden Hubbard	26
Long White	25
White Bush Scallop	50
Long White Bush	27

Egg Plant.—The Improved New York Spineless was tested this year. It was sown on April 3 and planted out on June 24; they flowered but did not set any fruit. Two plants left in the cold frame each produced one fruit.

Rhubarb.—The plants in the open did well and yielded an abundant supply in their season. Roots were taken up in the late fall, packed in moss and forced in the cellar. Forcing commenced on the 24th of November, and the plants yielded their first pulling on January 1. One root which was first ready for pulling on January 3, continued to yield until February 26, and produced a total of 9 pounds, eleven ounces.

Seakale.—Has proved most valuable, providing as it does a delicious vegetable at a time when no other fresh vegetable is obtainable. Seakale is in the first place propagated from seed, and though it takes a little longer to mature the crop than in the case of most vegetables, it more than repays the effort of those who will take the trouble. The seed is contained in a husk which may be broken prior to sowing. Sow the seed thinly in a drill 1 to 2 inches in depth in well-worked soil in the spring, and by fall the plants will be of considerable size. It will probably be wiser to leave a part of the crop in the ground for the winter (where it should be covered in localities where the temperature is likely to drop to zero) with straw manure for protection, while a number, so that there may be no risk of the year's work being lost, should be stored in the root cellar and set out again in the spring. At the end of the second season the plants will have developed, and will be removed for the winter's forcing, though some plants, protected as in the previous year, should be left in the ground for early spring forcing. Those it is intended to remove should be lifted as soon as the leaves break away from them under slight pressure, probably about the middle of October. The root system should consist of a straight growth 6 to 9 inches long, and 1 to 2 inches thick (the forcing crown), and a number of smaller pieces 3 or 4 inches long and slightly thicker than a lead-pencil. These latter should be cut off close to the parent root and should be trimmed off squarely at the top and slopingly at the other extremity. These "whips," as they are termed, should be packed in earth in the cellar till spring in shallow boxes with the growing ends just protruding above the surface of the soil. As spring approaches these should be placed in the light and kept slightly moist until weather conditions permit their being planted out in the open. They should be planted in the open 18 inches to 24 inches apart in well manured ground. These whips in the autumn will have developed into the forcing crowns required and the method as before described will be employed to secure the next season's whips.

To return to the forcing crowns taken into the cellar in the fall. These should be packed in earth or moss. The latter method has been used this last year with entirely satisfactory results and its use has been found cleaner and more convenient, being lighter to handle and retaining the moisture better. It has proved most convenient for household use to pack about six crowns in a box say 10 inches by 18 inches by 18 inches high, leaving about 12 inches clear space above the tops of the crowns to allow room for growth, and covering the top with sacking to exclude the light, and as these crowns become exhausted another box can be brought into bearing. At an average temperature of 55 degrees F., about a month's forcing is required before the kale is ready for use though of course as spring approaches the period required for forcing becomes shorter.

The total forced growth last year averaged 16 ounces per crown. In the spring the crowns left in the open can be forced in the same manner as rhubarb for rapid forcing, or simply banked with earth and blanched. The employment of the two methods of course extends the season.

CULTURAL EXPERIMENTS WITH VEGETABLES.

During the year a series of cultural experiments was added to the work previously undertaken in the testing of varieties; an account of this branch of the horticultural work follows.

Cabbage.—To ascertain the advantage, if any, of starting plants in hotbed rather than sowing seed in open, in their permanent location:—

Variety.	Sown Hotbed.	Ready for use.	Sown Open.	Ready for use.
Early Jersey Wakefield	Mar. 26	July 7	May 1	July 28
Copenhagen Market	" 26	" 19	" 1	Aug. 5
Paris Market	" 26	" 1	" 1	July 22

Cauliflower.—The same experiment as that described above for cabbage was also tried with three varieties of cauliflower:—

Variety.	Sown in Hot bed.	Ready for use.	Sown in open.	Ready for use.
Danish Giant	Mar. 31	July 1	May 3	Aug. 1
Early Dwarf Erfurt	" 31	" 1	" 3	" 1
Snowball	" 31	" 1	" 3	" 1

INVERMERE.

Celery.—Experiments were made to ascertain the relative advantage of various methods of blanching. Five rows of Golden Self-blanching were planted, and these were treated with: (1) Pliable protection; (2) boards 1-inch by 12 inches; (3) earth; (4) in trench, manured; (5) in trench, without manure.

The conclusions arrived at were that the method of blanching with pliable protection was the simplest and most expedient; especially with early varieties. We were, further, unable to see any improvement in the celery treated with manure (4) over that not so treated (5), and we found the trench method of blanching more laborious and less convenient for irrigating.

Onions.—To determine the relative value of growing plants in hotbed and sowing seed in permanent location:

Variety.	Sown in Hotbed.	Planted in open.	Length of row.	Yield in pounds.
			Ft.	
Danvers Yellow Globe	Mar. 24	May 5	100	111
Extra Early Red	" 24	" 5	100	107
Large Red Wethersfield	" 24	" 5	100	118
		Sown in open.		
Danvers Yellow Globe		April 27	100	74
Extra Early Red		" 27	100	88
Large Red Wethersfield		" 27	100	60
		Planted.		
Onion Sets		April 27	100	85

One decided advantage we found in planting out from the hotbed was the opportunity this method gave over the other in keeping the land clear of weeds.

Peas.—An experiment was made to compare the relative advantage of sowing four selected varieties at one time, as compared with sowing the same variety four times at intervals of one week, to provide a continuous supply of vegetables during the season.

The four varieties noted below were sown on April 21 in rows 50 feet long and 3 feet apart. They were chosen in the expectation of their coming into bearing in the order named, but the first three varieties were all ready for use on the same day, and all three varieties also were yielding later than the last to come into bearing.

Yields.	July 16	July 21	July 27	Aug. 5	Aug. 19.	Total.
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
1. Thos. Laxton	1 11	1 11	8 0	6 0	8 0	25 6
2. Gradus	3 0	1 9	6 8		6 0	17 1
3. Advancer	1 6	2 7	6 0	12 0	8 0	29 13
4. Stratagem				22 0		22 0

Nos. 2, 3 and 4 were compared with three sowings of Thos. Laxton, sown on April 28, May 5, and May 12, which yielded as follows:—

Yields.	July 20	July 22	July 27	Aug. 3	Aug. 5	Total.
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
2. Thos. Laxton	5 3	3 14	12 0	18 0	10 0	32 1
3. Thos. Laxton			6 0	6 0	6 0	30 0
4. Thos. Laxton					22 0	28 0

INVERMERE.

A row of each of the four varieties used in the above tests was allowed to ripen seed to ascertain the practicability of raising seed economically. The following quantities were threshed:—

Thos. Laxton	48 pounds.
Gradus	30 "
Advancer	50 "
Stratagem	30 "

Potatoes.—A number of experiments were made to ascertain the relative suitability of small uncut and cut potatoes with a different number of eyes, for seed purposes. The results of these experiments follow:—

——	Large.	Small.	Total.
	lb.	lb.	lb.
Wee MacGregor... Small uncut, 1 ft. apart. Planted May 18. Rows 30 inches. Yield	33	29	62
Wee MacGregor... Cut to 1 eye 1 ft. apart. Planted May 18. Rows 30 inches. Yield	18	18	36
Wee MacGregor... Cut to 2 eyes 1 ft. apart. Planted May 18. Rows 30 inches. Yield	24	23	47
Wee MacGregor... Cut to 3 or more eyes, 1 ft. apart. Planted May 18. Rows 30 in. Yield	17	17	34

Early Hebron and Table Talk were the varieties used to experiment with the different distances apart both of the rows and in the rows:—

——	Large.	Small.	Total.
	lb.	lb.	lb.
Early Hebron rows 30 inches apart, plants 12 inches apart yielded	48	37	85
Early Hebron rows 30 inches apart. plants 14 inches apart yielded	42	30	72
Early Hebron rows 36 inches apart, plants 12 inches apart yielded	61	43	104
Early Hebron rows 36 inches apart, plants 14 inches apart yielded	61	44	105
Table Talk rows 30 inches apart, plants 12 inches apart yielded	25	16	41
Table Talk rows 30 inches aoart, plants 14 inches apart yielded	23	21	44
Table Talk rows 36 inches apart, plants 12 inches apart yielded	56	26	82
Table Talk rows 36 inches aoart, plants 14 inches apart yielded	57	20	77

The relative advantage of using sprouted or unsprouted sets was also tested with two varieties viz.: Irish Cobbler and Wee MacGregor. These were planted at the same time, on May 18, the sprouted potatoes having been allowed to sprout in the cellar. Both were ready for use at the same time and yielded as follows:—

——	Marketable.	Small.	Total.
	lb.	lb.	lb.
Irish Cobbler (sprouted	57	20	77
" (unsprouted)	51	28	79
Wee MacGregor (sprouted)	87	16	103
" (unsprouted)	80	18	98

The above were planted in rows 2 feet 6 inches apart, sets 12 inches apart in rows, and rows 100 feet long.

INVERMERE.

IRRIGATION TEST.

Three varieties of potatoes were tested, one without irrigation and each of the others with one and two irrigations respectively. Rows as before 100 feet long, distance apart 2 feet 6 inches and sets 12 inches apart in the row. The following results were obtained:—

Variety.	Method.	Marketable.	Un-Marketable.	Total.
		lb.	lb.	lb.
Sir Walter Raleigh	No irrigation	150	54	204
Wee MacGregor	"	115	64	179
Conquering Hero	"	136	60	196
Sir Walter Raleigh	One irrigation	144	63	207
Wee MacGregor	"	185	80	265
Conquering Hero	"	176	83	259
Sir Walter Raleigh	Two irrigations	155	45	200
Wee MacGregor	"	179	81	260
Conquering Hero	"	120	68	188

Tomatoes.—The following cultural experiments were made with tomatoes: Sown in hotbed March 23, in cold frame April 19, planted in open June 11. 25 plants used:

Bonny Best, unpruned, no supports, 4 feet by 4 feet apart, 140 lb. green, none ripe.

Bonny Best, pruned to one stem and tied to stakes, 2 feet by 4 feet apart, 40 lb. green, 6 lb. ripe.

Bonny Best, pruned to two stems and tied to stakes, 2 feet by 4 feet apart, 71 lb. green, 1 lb. ripe.

LAWNS, FLOWERS AND HEDGES.

During the year much was done to improve the appearance of the Station by the sowing of lawns and by transplanting into permanent locations a number of ornamental hedges, roses, pæonies, iris, etc.

A number of native hedges have also been planted, and seem to have withstood the winter well.

The flower garden was located in a new position on land which had not been cultivated until preparation for the garden was made in the spring. For this reason, seeds planted were late in germinating, though towards the end of the season there was a most attractive display. A number of geraniums were sent to us from Ottawa which did well and cuttings were taken in the fall but only a few survived as we have no place to keep them but a fairly lighted cellar. The sweet peas made a magnificent showing; the twelve best varieties being: Etta Dyke, Illuminator, Lilian, Helen Pierce, Tennant Spencer, Florence Nightingale, Scarlet Emperor, Princess May, Helen Grosvenor, Decorator, Nubian, Barbara.

Pæonies.—These made a splendid showing along the west fence early in July and continued in bloom until the third week of July. Couronne D'Or, Duchesse de Nemours and Felix Crousse were among the earliest bloomers and made the finest show.

Bulbs.—The tulips planted in the autumn of 1914 along the rising ground bordering the lawns made a fine show in April and May of this year. The daffodils also planted along the west ditch line did much better than in the drier location of last year.

INVERMERE.

The hyacinth bulbs set in the autumn of 1915 were planted in window boxes and pots indoors and started in the basement. These made a splendid show all through the months of February and March. A few snowdrops, tulips and daffodils were also planted in window boxes, and these also are doing exceedingly well.

APPLES.

All varieties of apples made good growth during the summer of 1915, but, owing to the exposed position of the orchard at the Experimental Station, three timese during the past winter the snow completely disappeared, and this, together with the exceptionally low temperatures, has resulted in the killing of many of the tender varieties.

The crabs, Wealthy, Yellow Transparent, and some hardy varieties received from the Central Experimental Farm promise well. Cover crops and other cultural experiments started in 1913, have been continued in the orchard.

BUSH FRUITS.

Gooseberries.—The Oregon Champion gooseberries bore a good crop there being an average of 5 pounds ber bush. All the other varieties were attacked by mildew.

Black Currants.—A fair crop of black currants was obtained.

Red Currants.—Came into bearing for the first time and yielded a light crop.

Raspberries.—The raspberry crop promised well but it was badly attacked by the red spider before the fruit fully matured. The bushes were thoroughly sprayed with a mixture of coal oil, soap and rain water. The old fruiting canes were cut out on August 17.

INVERMERE.

EXPERIMENTAL STATION, SUMMERLAND, B.C.

REPORT OF THE SUPERINTENDENT, R. H. HELMER.

This is the first annual report of the horticultural work carried on at the Experimental Station, Summerland, B.C., but as it was not possible to do much experimental work this year, there is not much to report on.

The season of 1915 was very promising for unirrigated crops in the spring, but as usual July and August were very trying on growing crops. Field beans of which a number of varieties were planted made good growth, receiving very little water, and a fair crop of good beans was harvested. These were threshed through a grain separator with all teeth removed from the cylinder and concave; it cleaned the beans very well but too many were split and the varieties were somewhat mixed.

A few apple trees only were planted to see if they would become established without irrigation, namely, 20 Delicious, 20 Duchess, 20 Wagener, 20 Jonathan, and 20 Rome Beauty; these did very well without any irrigation. Out of the lot, three died and they were in very hard spots where an old road had been. All the trees were wrapped early in the fall as there are quite a few jack rabbits in the sage brush surrounding the Station and they come to feed on the clover and alfalfa.

The Soy beans with the exception of Quebec No. 92 did not produce pods to any extent. The main crop produced hardly any but made splendid growth. They were left growing as long as possible as they had flowered so late and a few beans were forming. The plants had to be cut with a mower as they were so hard to plough under, and they were harvested for bedding the horses. It was found that the horses would leave any other fodder to eat their bedding and an improvement in their coats has been noticed.

Bulbs from the Sidney Station and also those from Holland arrived in good condition and were planted. The Sidney bulbs have been kept by themselves that they may be compared with the others.

Some tomatoes were grown on a very sandy patch of ground near the stable with very good results. They were hotbed plants set in the open and there were ripe tomatoes on July 8, and a heavy crop of fruit during the summer.

The trees planted in the spring of 1915 came through the winter well.

Hotbeds were started in March, 1916, and by the end of the month they were filled with plants ready to go out when the weather became warmer.

There is every indication of a big apple year in this district; and peaches, apricots, and sweet cherries are not as much damaged by the severe winter as was at first thought. Many experiments with fruits, vegetables, and flowers will be started at this Station in 1916.

EXPERIMENTAL FARM, AGASSIZ, B.C.

REPORT OF THE SUPERINTENDENT, P. H. MOORE, B.S.A.

The horticultural work at this Farm has been subject to many changes of men and the past year has not been an exception. J. D. Brydon, who had charge for a year, enlisted for overseas service in May and at this date it was rather difficult for a new man to pick up the work. However, a great deal of variety test work was done and some few experiments.

The spring was a very early one and all planting was done correspondingly early. The show of early bloom was good, and this show was kept up until the dry weather in July checked it. August and September were exceptionally hot and dry causing much damage in the vegetable as well as the flower garden. The autumn was wet but not severe and many of the shrubs and perennial plants went into winter in a very soft condition. The winter was the worst on record for both cold and duration of cold. Many types of plants were badly damaged by the cold winds. Douglas fir, Thuya, Yew, Catalpa, Holly, Boxwood, Rhododendron, and Laburnum were among the trees and shrubs showing the most damage. The spring is very wet and late and by March 31 there is very little bloom showing and very little planting done.

AGASSIZ.

POTATOES.

TEST OF VARIETIES.

The following varieties of potatoes were grown in plots of 1/32 of an acre with the results indicated in the table:—

No.	Name of variety.	Size.	Season.	Date of planting.	Date of digging.	Total yield per acre.		Yield marketable per acre.		5 yr. average marketable per acre.		Form and Colour.
						tons.	lb.	tons.	lb.	tons.	lb.	
1	Gold Coin	Large	Late	May 3	Sept. 25	14	248	12	1,344	10	1,323	Round White.
2	American Wonder	Large	Medium to late	" 2	" 24	15	724	13	1,324	9	1,522	Long White.
3	Dreer Standard	Large	Medium to late	" 2	" 24	15	96	13	1,720	9	1,314	Round White.
4	Empire State	Large	Late	" 2	" 22	14	1,568	13	796	9	551	Long White.
5	Dalmeny Beauty	Large	Late	" 2	" 24	7	1,444	6	936	9	263	Flattish White.
6	Morgan Seedling	Large	Medium to late	...	...	...	...	...	...	8	1,605	Long Red.
7	Early St. George	Medium	Early	Apr. 30	" 10	12	1,542	11	1,232	8	1,560	Long Red.
8	Rawlings Kidney	Large	Medium early	30	" 22	14	116	12	948	8	1,436	Long White.
9	Carman No. 1	Large	Medium to late	May 2	" 24	13	202	12	420	8	368	Round White.
10	Table Talk	Medium	Medium to late	" 2	" 24	11	44	9	84	8	89	Round White.
11	Money Maker	Small	Medium to late	Apr. 30	" 22	11	1,440	10	196	7	1,724	Long White.
12	Everett	Large	Medium to late	May 2	" 24	12	86	11	562	7	1,646	Long Red.
13	Late Puritan	Large	Late	" 2	" 22	16	736	11	308	7	1,104	Long White.
14	Reeves Rose	Medium	Early	...	...	...	...	...	...	*7	767	Long Red.
15	Rochester Rose	Medium	Early	...	...	...	...	...	...	†7	57	Long dark Red.
16	Irish Cobbler	Medium	Medium to early	Apr. 30	" 30	4	1,900	4	52	6	1,286	Round White.
17	Hard to Beat	Small	Medium to late	May 3	" 25	13	334	10	1,384	6	886	Round White.
18	Wee MacGregor	Medium	Medium to late	...	...	...	...	...	...	*5	1,621	Oblong White.
19	Vick Extra Early	Large	Early	Apr. 30	" 9	6	616	5	504	5	1,097	Oblong Pink.
20	Factor	Small	Medium to late	May 3	" 25	7	1,048	4	712	3	1,758	Round White.
21	Arran Chief	Medium	Very late	" 3	" 25	13	1,060	12	156	...	...	Oval White.
22	Hood River	Large	Very late	" 3	" 25	14	248	12	1,608	...	...	Long Rose.
23	Early Rose	Small	Early	Apr. 30	" 9	6	1,200	5	1,352	...	...	Long Rose.

*Average annual yield per acre for 3 years.
†Average annual yield per acre for 4 years.

EXPERIMENTS WITH KINDS OF SET.

Variety experimented with: Gold Coin.

Planted in rows 66 feet long, 30 inches apart, seed planted 12 inches apart in rows. Planted May 1, harvested September 20.

By the table it will be seen that the seed from potatoes having strong buds at seed end only gave the best results in all cases but one, and that the seed, cut to two eyes only, was the best yielder in both the experiments, and required the second smallest amount of seed to be planted.

—	Seeds from potatoes having strong buds from seed end to base.					Seed from potatoes having strong buds near seed end only.				
	Weight of seed planted per acre.	Yield per acre.				Weight of seed planted per acre.	Yield per acre.			
		Marketable.		Not marketable.			Marketable.		Not marketable.	
	lb.	tons.	lb.	tons.	lb.	lb.	tons.	lb.	tons.	lb.
Whole small potato	2221	7	256	......	1056	2112	10	592	......	1320
Cut to one eye	858	8	896	......	1584	1089	10	328	......	1056
Cut to two eyes	1452	10	1684	......	1848	1320	10	856	......	2904
Cut to three or more eyes	1600	9	744	......	2112	1864	9	1272	......	2904

HILLED AND LEVEL CULTIVATION.

Variety experimented with: Gold Coin.

Area planted: one-twentieth acre.

Planted in rows, 30 inches apart, sets planted 12 inches apart in the row.

This experiment shows that the better yield was obtained from the potatoes which were hilled after the last cultivation than from the level cultivation.

—	Date Planted.	Date Harvested.	Yield per acre marketable.		Yield per acre. not marketable.	
			Tons.	lb.	Tons.	lb.
Level cultivation	April 30	Sept. 22	11	460	1	980
Hilled after last cultivation	" 30	" 22	12	1360	1	560

AGASSIZ.

COMPARISON OF CROPS FROM FOUR CULTIVATIONS AND EIGHT CULTIVATIONS.

Variety experimented with: Gold Coin.

Area planted: one-twentieth acre.

Planted in rows 30 inches apart, sets planted 1 foot apart in rows.

The potatoes cultivated eight times show that the extra cultivation is beneficial to the crop, the loosening of the soil between the rows causes a better yield to result, and, if not cultivated too deep the last two or three times, will not disturb the growing tubers.

—	Date Planted.	Date Harvested.	Yield per acre marketable.		Yield per acre not marketable.	
			tons.	lb.	tons.	lb.
4 cultivations	April 30	Sept. 22	12	960	1	1300
8 cultivations	April 30	Sept. 22	13	220	1	1200

EXPERIMENT IN DISTANCE OF PLANTING.

Variety experimented with: American Wonder.

Area planted: one-twentieth acre.

Sets used had at least three eyes.

Seed planted in rows 2½ feet apart gives a larger return than that planted in rows three feet apart. Where the sets are only 12 inches apart in the rows the yield is better than where they are 14 inches apart.

—	Sets 12 in. apart.				Sets 14 in. apart.			
	Yield per acre marketable.		Yield per acre unmarketable.		Yield per acre marketable.		Yield per acre unmarketable.	
	Tons.	lb.	Tons.	lb.	Tons.	lb.	Tons.	lb.
Rows 2½ feet apart	12	860	1	1120	10	1940	1	1440
Rows 3 feet apart	9	1560	1	320	9	840	1	500

AGASSIZ.

EXPERIMENT IN PLANTING ON DIFFERENT DATES.

Varieties experimented with: Irish Cobbler (early), Gold Coin (late).

Planted in rows 66 feet long, 30 inches apart. Sets planted 12 inches apart in the rows.

Planted on eight different days, seven days interval between planting.

Harvestings: last five of Irish Cobbler were on September 20.

Harvestings: last five of Irish Cobbler were on August 27.

Harvestings: all eight of Gold Coin were on September 20.

In this experiment it is shown that seed planted in the middle of May gave the best results, both in the case of the early and late variety, that sown on May 15 being far ahead of that sown on any other date; particularly is this to be noticed in the late variety.

EXPERIMENT IN PLANTING ON DIFFERENT DATES.

Date planted.	Irish Cobbler.					Gold Coin.				
	No. of days to mature.	Yield per acre marketable.		Yield per acre unmarketable.		No. of days to mature.	Yield per acre marketable.		Yield per acre unmarketable.	
		tons.	lb.	tons.	lb.		tons.	lb.	tons.	lb.
April 10	139	5	1352	2	224	163	8	896	1	1452
" 17	132	6	408	1	1382	156	9	744	1	640
" 24	125	6	736	1	904	149	9	1008	1	376
May 1	142	6	1992	1	1168	142	9	1536	1	640
" 8	135	8	104	1	376	135	9	480	2	488
" 15	128	8	1952	1	1432	128	12	1608	1	904
" 22	121	5	1880	2	224	121	9	216	2	224
" 29	114	4	448	1	1168	114	5	560	2	1544

AGASSIZ.

Comparison of potatoes cut and coated with gypsum or land plaster, with sets not so coated and planted the same day, also cutting and coating, and not coating the sets two weeks before planting.

Variety experimented with: Gold Coin.

Planted in rows 66 feet long, rows 30 inches apart, sets planted 12 inches apart.

All planted May 8.

All harvested September 21.

By the table below it will seem that coated seed was in both instances superior to uncoated seed in producing a crop, and that the seed cut fourteen days before being planted gave better results than fresh-cut seed both when coated and uncoated.

Coated with plaster.

Fresh cut and planted.				Cut and coated 14 days before planting.			
Yield per acre Marketable.		Yield per acre Unmarketable.		Yield per acre Marketable.		Yield per acre Unmarketable.	
Tons.	lb.	tons.	lb.	tons.	lb.	tons.	lb.
8	104	2	204	10	1,384	2	752

Uncoated.

Fresh cut and planted.				Cut 14 days before planting.			
Yield per acre Marketable.		Yield per acre Unmarketable.		Yield per acre Marketable.		Yield per acre Unmarketable	
tons.	lb.	tons.	lb.	tons.	lb.	tons.	lb.
7	1,312	....	1,848	9	1,800	....	1,320

EXPERIMENTS FOR EARLY CROP.

An experiment was made in the planting and growing of potatoes in various ways for early crop.

First: from seed consisting of cut tubers.

Second: from seed consisting of whole tubers, unsprouted.

Third: from seed consisting of whole tubers, sprouted.

Number of varieties, ten; four early, six late.

Drills 30 feet long for each variety, and 30 inches apart.

Sets planted 1 foot apart in drill, thirty of each variety.

Manure in drills at the rate of 16 tons per acre.

All seed planted on March 19, 1915.

Harvested at intervals of two weeks, 10 feet of each variety at each harvesting.

In the following tables: No. 1 represents cut tubers, No. 2 represents whole tubers unsprouted, No. 3, represents whole tubers sprouted.

RESULT of 10 feet harvested.

Test No.	Amount seed planted per 30″.		June 25.				July 13.				July 30.				Total weights of crops.			
			Marketable		Not marketable		Marketable		Not marketable		Marketable		Not marketable		Marketable		Not marketable	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Early St. George........																		
1........	2·	12·	2·	10·	nil.		7·	......	......	8·	5·	4·	nil.		14·	14·	......	8·
2........	7·	12·	12·	10·	......	8·	13·	......	......	8·	12·	8·	1·	8·	38·	2·	2·	8·
3........	8·	......	14·	......	1·	....	15·	......	......	12·	18·	......	1·	8·	47·	......	3·	4·
Rochester Rose.																		
1........	2·	8·	5·	12·	......	......	5·	8·	......	......	6·	8·	......	8·	17·	12·	......	8·
2........	10·	......	10·	8·	2·	8·	18·	......	1·	......	9·	......	......	8·	37·	8·	4·	......
3........	9·	8·	16·	12·	......	8·	18·	8·	1·	8·	19·	......	2·	......	54·	4·	4·	......
American Wonder.																		
1........	2·	8·	1·	......	......	......	......	......	......	......	......	......	......	......	1·	......	......	......
2........	7·	......	11·	12·	1·	......	18·	8·	......	......	22·	4·	......	12·	52·	8·	1·	12·
3........	7·	4·	13·	......	......	8·	25·	8·	2·	......	23·	......	2·	......	61·	8·	3·	8·
Irish Cobbler.																		
1........	1·	......	3·	8·	......	4·	5·	8·	......	......	4·	12·	......	8·	13·	12·	......	12·
2........	8·	8·	7·	12·	......	12·	6·	8·	1·	......	6·	12·	......	......	21·	......	1·	12·
3........	7·	12·	9·	12·	......	4·	7·	8·	......	......	10·	......	......	8·	27·	4·	......	12·
Everett.																		
1........	2·	8·	1·	8·	1·	......	4·	8·	......	......	4·	8·	......	......	10·	8·	1·	......
2........	9·	......	6·	8·	......	8·	11·	12·	4·	......	8·	8·	1·	......	26·	12·	5·	8·
3........	9·	8·	12·	4·	......	4·	14·	8·	2·	......	15·	8·	......	·8	42·	4·	2·	12·
Carman No. 1																		
1........	3·	8·	3·	8·	......	......	4·	8·	......	4·	5·	12·	......	......	13·	12·	......	4·
2........	8·	......	12·	8·	......	8·	16·	10·	......	4·	8·	......	......	......	37·	2·	......	12·
3........	9·	8·	8·	......	......	......	16·	2·	......	6·	18·	8·	......	·8	42·	10·	......	14·
Dreer Standard.																		
1........	3·	......	3·	4·	1·	......	4·	8·	......	8·	12·	......	......	......	19·	12·	1·	8·
2........	8·	......	12·	8·	......	8·	16·	12·	......	......	18·	8·	......	......	47·	12·	......	8·
3........	8·	8·	13·	8·	......	......	16·	......	1·	8·	18·	......	1·	......	47·	8·	1·	8·
Early Rose.																		
1........	2·	12·	4·	......	......	8·	8·	4·	1·	......	1·	8·	......	......	13·	12·	1·	8·
2........	8·	8·	13·	......	2·	......	16·	......	......	8·	24·	8·	1·	......	53·	8·	3·	8·
3........	8·	......	14·	2·	......	14·	20·	......	1·	......	23·	8·	2·	......	57·	10·	3·	14·
Late Puritan.																		
1........	2·	4·	2·	8·	......	......	3·	8·	......	8·	2·	8·	1·	......	8·	8·	1·	8·
2........	9·	......	6·	8·	......	8·	8·	4·	......	12·	8·	8·	......	8·	23·	4·	1·	12·
3........	8·	8·	9·	......	......	8·	10·	8·	......	8·	24·	......	......	8·	43·	8·	1·	8·
Gold Coin.																		
1........	4·	......	4·	......	......	......	7·	......	......	8·	4·	8·	......	8·	15·	8·	1·	......
2........	9·	......	9·	8·	......	8·	17·	8·	......	12·	8·	8·	......	......	35·	8·	1·	4·
3........	9·	8·	10·	......	......	8·	17·	......	......	8·	20·	......	......	8·	47·	......	1·	8·

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SUMMARY OF RESULTS.

Dates of harvesting.	Weight of crop from cut seed.		Weight of crop from whole unsprouted seed.		Weight of crop from whole sprouted seed.		Total.	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Four Early Varieties—								
June 25	15	14	43	14	54	10	114	6
July 13	26	4	53	8	61	..	140	12
July 30	18	..	52	12	70	8	141	4
Totals	60	2	150	2	186	2	396	6
Six Late Varieties—								
June 25	15	12	59	4	65	12	140	12
July 13	24	.	89	6	99	10	213	.
July 30	29	4	74	4	119	..	222	8
Totals	69		222	14	284	6	576	4
Early and Late Varieties Combined—								
June 25	31	10	103	2	120	6	255	2
July 13	50	4	142	14	160	10	353	12
July 30	47	4	127	..	189	8	363	12
Totals	129	2	373	..	470	8	972	10

These figures are based on weights of marketable potatoes only.

From the above tables the experiment shows that the sprouted whole seed produced better results than either of the other forms of seed, the unsprouted whole seed being next in order of merit. Both forms of whole seed gave better results than the cut seed. This was more particularly noticeable in the early varieties than in the late ones, and in the early harvesting than in the later ones.

The test from a market gardener's point of view would seem strongly to favour the planting of sprouted whole seed of a desirable variety for early results.

According to the above tables, a much greater quantity of seed was used in planting the whole seed, both sprouted and unsprouted, than in planting the cut seed, and this must be taken into consideration in estimating the relative benefits derived from the above test. In most cases it was three times the weight used in the cut seed test.

PEAS.

Sixteen varieties of peas were tried this year; each variety occupying one row 30 feet long, rows 3½ feet apart. Twelve were sown on March 29; and four, Thomas Laxton, Quite Content, Early Giant, and English Wonder, on April 21. Juno was for the second consecutive season the largest producer and on the three years' average was also the best.

Heroine and Quite Content were tied for second place in this season's results as was Heroine also in the three years' average. Telephone was a good fourth. Gregory Surprise and American Wonder were the first ready for use, June 17, closely followed by Gradus and Sutton Excelsior. Quite Content made a great improvement on last season's showing, it has a very large pod containing large peas of an excellent flavour, and grows to a great height, eight feet or over.

Variety.	Date Sown.	Date ready for use.	Height.	Yield per plot.		3 years' average.	
				lb.	oz.	lb.	oz.
Juno	Mar. 29	July 4	3′0″	30	......	27	9
Heroine	„ 29	July 3	3′6″	28	8	22	13
McLean Advancer	„ 29	July 3	3′6″	24	8	22	8
Stratagem	„ 29	July 10	2′6″	20	12	19	7
Premium Gem	„ 29	June 26	2′0″	25	8	19	5
Telephone	„ 29	June 26	6′0″	26	12	18	15
American Wonder	„ 29	June 17	1′6″	10	......	16	8
Gradus	„ 29	June 18	4′6″	11	8	14	15
Gregory Surprise	„ 29	June 17	3′0″	12	4	14	7
Sutton Excelsior	„ 29	June 19	1′6″	13	......	14	7
Thomas Laxton	April 21	July 3	3′6″	9	8	14	2
The Lincoln	Mar. 29	July 5	3′0″	15	8	11	4
Dainty Duchess	„ 29	July 3	7′6″	21	......	20	8
Quite Content	„ 29	July 7	8′0″	28	8	......	
Early Giant	April 21	July 1	3′0″	14	......	......	
English Wonder	„ 21	July 10	2′6″	16	......	......	

ONIONS.

Variety.	Date Sown.	Date Harvested.	Yield per plot 1915.		3 years' average yield.	
			lb.	oz.	lb.	oz.
Salzer Great Red Wethersfield	Mar. 29	Sept. 2	16	......	12	9
Large Red Wethersfield	“ 29	“ 2	14	4	12	15
Johnson Dark Red Beauty	“ 29	“ 2	21	0	....	
Red Globe	“ 29	“ 2	21	0	....	
Danvers Yellow Globe	“ 29	“ 2	23	0	....	
Yellow Globe	“ 29	“ 2	21	0	....	
White Globe	“ 29	“ 2	17	0	....	

Onions.—Of the seven varieties tried this season, all sown on the same date, March 29, Yellow Globe Danvers was the most successful; it is a good onion both for flavour and keeping qualities and suitable to this locality. Red Globe and Red Wethersfield are also good varieties, being uniform in size and shape and good keepers. White Globe is a good onion for pickling. Yellow Globe is early but does not keep well. Each variety occupied one row 60 feet long, the rows being one foot apart.

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ONIONS—CULTURE TEST.

An experiment was made this season with four varieties of onions. In one case, the seed was sown outside in the open and in the other the seed was sown in the hotbed and plants were transplanted into the open bed. The results show that the seed sown outside gave a much better yield than that sown in the hotbed and the plants transplanted, the transplanting apparently not suiting the nature of the onions. The dry season may have affected the transplanted onions as there was a lack of moisture for a long time after the transplanting took place. Each variety occupied one row 60 feet long, the rows being 1½ feet apart.

Variety.	Sown Outside.			Sown in Hotbed and Transplanted Outside.		
	Date Sown.	Yield per plot Sept. 11.		Date planted out	Yield per plot Sept. 2.	
		lb.	oz.		lb.	oz.
Large Red Wethersfield	April 21	27	4	May 20	10	8
Giant Prizetaker	" 21	26	8	" 20	9	0
Extra Early Red	" 21	15	0	" 20	8	8
Yellow Globe Danvers	" 21	25	4	" 20	16	0

CORN.

The heaviest yielder of the fifteen varieties of corn planted was Stowell Evergreen. This yielded 98 pounds from the plot or nearly 24 tons per acre. Pocahontas was a good second with 94 pounds from the plot or nearly 23 tons per acre.

Stowell Evergreen, Henderson Metropolitan and Country Gentleman are all good croppers and of good flavour. Golden Bantam is without doubt much the best corn in point of flavour though as its name implies it is of shorter growth than the heavy cropping varieties and the cobs are smaller. Its colour even when unripe is a rich golden yellow. Black Mexican is of good flavour and a fair yielder and being somewhat of a curiosity is popular. Each variety of corn occupied 144 square feet, 12 hills, 3 by 4 feet apart.

Variety.	Date Sown.	Date ready for use.	Yield per plot.		Height.	Yield per acre.		3 years average.	
			lb.	oz.		lb.	oz.	lb.	oz.
Early Evergreen	April 29	Aug. 31	79	0	7′0″	19	236	56	0
Country Gentleman	" 29	" 31	73	0	6′6″	17	1332	58	5
Fordhook Early	" 29	" 23	77	0	4′6″	18	1268	55	0
Perkins Early	" 29	" 28	69	0	6′6″	16	1396	54	2
Henderson Metropolitan	" 29	" 31	57	0	6′0″	13	1588	49	2
Stowell Evergreen	" 29	Sept. 3	98	0	7′6″	23	1432	49	13
Black Mexican	" 29	Aug. 31	61	4	7′6″	14	1643	46	2
Extra Early Adams	" 29	" 11	32	8	2′6″	7	1730	41	0
Golden Bantam	" 29	" 28	51	0	4′0″	12	684	35	5
Early Malcolm	" 29	" 21	32	0	2′0″	7	1488	31	8
Early Iowa	" 29	" 22	32	0	2′0″	7	1488	27	8
Pocahontas	" 29	" 31	94	0	6′6″	22	1496	72	0
White Squaw	" 29	" 17	54	0	4′6″	13	136	45	0
Early Dawn	" 29	" 24	32	8	3′0″	7	1730	24	2
Red Squaw	" 29	" 25	24	0	2′0″		5616		......

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TOMATOES

Twelve varieties were grown this season. These were all sown in the hotbed on March 18, with the exception of one variety which was sown on March 24. From the hotbed they were transplanted to pots and from these to the open about the second week in May.

Victoria Whole Salad is without exception the best all round variety tried. Its shape and flavour leaves nothing to be improved on and further it is a heavy cropper. It is also earlier to ripen than any other variety and is not so subject to rot in wet weather as so many other varieties are.

Sunnybrook Earliana, Florida Special, Chalk Early Jewel and Prosperity have no results recorded for this year as the labels in the hotbed got mixed and it was impossible to separate these varieties. These four varieties are very suitable to the locality and of good quality.

In computing the weights of the tomato crop the green as well as the ripened fruit is taken account of as there is a good demand for it for preserves, pickles, etc.. Also it is not every year in this locality that all tomatoes ripen. The tomato crop this year ripened exceedingly well and the percentage of green fruit left at the end of the season was small. The rot which was troublesome last season was practically nil this year.

Variety.	Date Sown.	Date ready for use.	Yield from five average plants.		Yield per acre.		Annual average for 3 years.	
			lb.	oz.	tons.	lb.	lb.	oz.
Bonny Best	Mar. 18	Aug. 2	83	8	22	465	43	6
I. X. L. Extremely Early	" 18	" 2	78	......	21	471	43	1
Rennie XXX Earliest	" 18	" 2	71	4	19	795	42	8
Alacrity	" 18	" 2	53	8	14	1130	39	7
North Adirondack Earliana	" 18	" 2	64	4	17	984	39	4
Victoria Whole Salad	" 18	July 22	71	8	19	931	[1]64	5
Johnson Jack Rose	" 18	Aug. 6	70	4	19	251	[1]55	
Scarlet Dewdrop	" 24	" 13	77	8	21	198	......	
Sparks Sunnybrook Earliana	" 18	......	......	......	......	......	32	14
Florida Special	" 18	......	......	......	......	......	30	4
Chalk Early Jewel	" 18	......	......	......	......	......	33	11
Prosperity	" 18	......	......	......	......	......	35	6

BEETS.

Cardinal Globe was for the second season the best beet grown both for quality and yield though so far as yield was concerned Early Model was nearly as good. Early Model attains a large size and keeps its shape well. New Early Black Red Ball is the best beet for flavour and colour but its yield is comparatively small. Eclipse was first in the three-year average and is a heavy cropper but is coarse and stringy. Each variety of beet occupied one row 30 feet in length, the rows being 1½ feet apart.

Variety.	Date Sown.	Date ready for use.	Yield per plot.		Yield per acre.		Annual average yield per plot for 3 years.	
			lb.	oz.	tons.	lb.	lb.	oz.
Cardinal Globe	May 4	July 16	64	12	18	19	[1]48	4
Meteor	" 4	" 8	39	......	11	659	48	13
Ruby Dulcet	" 4	" 21	47	8	13	1597	47	13
New Early Black Red Ball	" 4	" 7	12	8	3	1262	31	5
Eclipse	" 4	" 16	21	8	6	491	54	4
Crosby Egyptian	" 4	" 21	54	......	15	1374		
Early Model	"	June 30	64	......	18	1184		

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[1] Annual average yield for two years only.

Agassiz.

CARROTS.

The carrots tested this season were sown later than last but were ready for use some time earlier. The best results were obtained from Half Long Chantenay with 107½ pounds. Improved Half Long Danvers came second with 95½ pounds. Half Long Chantenay and Nantes are both good table carrots. Early Scarlet Horn is the best for early use, is nicely shaped and a fair cropper. Late Chantenay has a good flavour.

Variety.	Date Sown.	Date ready for use.	Yield per 30-foot row.		Average annual yield for 3 years.	
			lb.	oz.	lb.	oz.
Half Long Chantenay	April 24	June 24	107	8	68	3
Improved Half Long Scarlet Nantes	Mar. 29	July 7	67	8	60	
Early Scarlet Horn	April 21	June 6	39	0	......	
Improved Half Long Danvers	Mar. 29	" 6	95	8	......	
Late Chantenay	May 5	July 4	41	0	......	

BEANS.

Of the nine varieties of beans tested this year Refugee or 1,000 to 1 gave the largest yield—27¾ pounds to 30 feet of row. Bountiful Green Bush and Grennell Rustless Wax were also good croppers. On the three-year average, Refugee or 1,000 to 1 is an easy leader.

The returns might have been greater had it not been for a spell of very hot weather during the picking season which exposed the roots to the heat of the sun.

Variety.	Date Sown.	Date ready for use.	Yield per plot. 1 row—30 ft. long.		Average annual yield per plot for 3 years.	
			lb.	oz.	lb.	oz.
Refugee or 1000 to 1	May 4	July 12	27	12	24	10
Bountiful Green Bush	" 4	" 10	18	4	20	12
Extra Early Refugee	" 4	" 12	12	4	20	1
Wardwell Kidney Wax	" 4	" 12	12	......	18	8
Burpee New White Seeded Green Pod	" 4	" 12	13	......	18	
Valentine Wax	" 4	" 12	8	......	15	13
Grennell Rustless Wax	" 4	" 13	13	12	16	
Extra Early Valentine	" 4	" 7	11	4	......	
Stringless Green Pod	" 4	" 12	13	8	......	

LETTUCE.

Six varieties of lettuce were grown this season. They were all sown on the same day and all matured within a few days of each other with the exception of Giant Crystal Head which matured as early as June 6.

Giant Crystal Head is an excellent lettuce. Its heads averaged 10 ounces each and some weighed as much as 20 ounces. Iceberg is a similar lettuce that can be well recommended and is a most useful variety. Grand Rapids is good for either early or late sowings. The other varieties went to seed more or less before reaching maturity which accounts at least in part for the decrease in their weights. Each variety of lettuce occupied one row 30 feet long, 60 plants being grown. The rows were a foot apart.

Variety.	Date sown.	Date harvested.	Yield per plot.		Annual average Yield per plot for 3 years.	
			lb.	oz.	lb.	oz.
Giant Crystal Head	Mar. 29	June 6	49	....	40	13
Iceberg	" 29	July 8	39	12	33	14
Grand Rapids Forcing	" 29	" 3	29	12	31	14
Improved Hanson	" 29	" 12	15	4	23	8
Dreer All Heart	" 29	" 12	6	12	9	4
May Queen	" 29	June 29	2	....	....	

TURNIPS.—Swede for Table use.

Owing to the prevalence of cabbage maggot which is particularly destructive to that kind, no white turnips were sown.

The best yielders among the ten varieties of swedes grown was Brydon Darlington which gave 95 pounds from 30 feet of row. It is also an extra early kind. All varieties did fairly well considering the dry season. An attack of lice lasting from August 29 to September 13 checked them somewhat, but from this time on they made rapid growth until October 4, when they were harvested.

Variety.	Date sown.	Ready for use.	Yield per 30 feet of row.	
			lb.	oz.
Brydon Darlington	May 11	Aug. 12	95	
Hall Purple Top	" 11	" 12	90	
Skirving Purple Top	" 11	" 12	74	
Bangholme Purple Top	" 11	" 12	72	
Best of All	" 11	" 12	72	
Westbury Purple Top	" 11	" 12	70	
Sutton Purple Top Champion	" 11	" 12	64	
Carter Invicta	" 11	" 12	61	
Brydon Monarch	" 11	" 12	52	
D & F Favourite	" 11	Sept. 1	44	

PARSNIPS.

Improved Hollow Crown was the better of the two varieties grown this season though the crop was not so large as it would have been had the season not been so dry. Both varieties were of good quality.

Variety.	Date sown.	Date ready for use.	Yield from 30 feet of row.		Annual average yield of 30-feet of row for 3 yrs.	
			lb.	oz.	lb.	oz.
Improved Hollow Crown	Mar. 29	Oct. 1	52	....	61	
Intermediate	" 29	" 1	43	8	....	

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PARSLEY.

Double Curled was the only variety tried this season. This is a good sort with dark green curled leaves. It was sown on April 29 and was ready for use July 20. The crop was excellent.

SALSIFY.

Long White was the only variety tried. It was not, however, very satisfactory. It was sown March 29 and ready for use about the beginning of September. The average crop for two years from 30 feet of row was 23 pounds.

SQUASH AND MARROWS.

Long White Marrow was the heaviest yielder of the marrows tried. There were 267 pounds harvested from three hills. This and the bush variety of the same marrow are the best for table and market purposes. The latter leads all in the three years' average. Custard Scallop is more of a curiosity than a useful vegetable as from its extraordinary shape when the rind is removed there remains very little edible matter. This remark applies also to the Summer Crookneck. Of the remaining varieties Golden Hubbard is best in flavour, shape and keeping qualities.

Variety.	Date sown.	Date ready for use.	Yield from 3 hills.		Annual average yield from 3 hills for 3 years.	
			lb.	oz.	lb.	oz.
Long White Bush Marrow	April 26	July 15	105	8	[1]173	14
Custard White Bush Scalloped	“ 26	“ 23	90	....	101	
Delicata	“ 26	Aug. 18	163	8	[1]141	12
Summer Crookneck	“ 26	July 13	51	....	68	6
Golden Hubbard	“ 26	“ 15	175	8	[1]123	13
Delicious	“ 26	“ 13	76	....	197	6
Long White Marrow	“ 26	“ 7	267	....	....	

[1] Average for two years only.

CUCUMBERS.

Seven varieties of cucumbers were planted in rows 7 feet apart, plants 3 feet apart in the rows. The weights were taken from seven plants of each variety.

Fordhook Famous was an extra good yielder and of a very nice flavour. Davis Perfection is a well shaped variety and has a nice smooth skin. Cool and Crisp failed to germinate at the first sowing and only two plants resulted at the second. The varieties tested are all worthy of a place in the market garden.

Variety.	Date sown.	Date ready for use.	Yield per plot.	
			lb.	oz.
Cool and Crisp	May 4	Aug. 12	‡17	4
Improved White Spine	“ 4	July 21	115	12
Giant Pera	“ 4	“ 21	99	4
Extra Early Russian	“ 4	“ 21	65	12
Prize Pickle	“ 4	“ 21	65	8
Fordhook Famous	“ 4	“ 21	156	8
Davis Perfection	“ 4	“ 21	102	

‡Only 2 plants yield.

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PUMPKINS.

Large Field and Sweet as Sugar varieties are similar except that the fruit of the former is larger averaging 18 to 20 pounds each as against 5 to 7 pounds each in Sweet as Sugar. Jumbo is a good yielder but rather coarser than the first two mentioned varieties. The three varieties tested matured within a few days of each other.

Variety.	Date sown.	Date ready for use.	Yield from 3 hills harvested Oct. 10.
			lb.
Large Field	May 6	Aug. 21	273
Sweet as Sugar	" 6	" 26	114
Jumbo	" 6	" 26	203

CELERY.

Celery did not do well this season largely because it was set out as a drought was commencing. It was transplanted about June 30. The best winter keepers were Evans Triumph and French Success. Giant Pascal and Improved White Plume are also good varieties. They both yielded well and have good flavour and quality. Burpee Fordhook did not germinate. It was sown too late in the season.

Variety.	Date sown.	Date planted out.	Date ready for use.	Weight of 30 plants harvested October 13.	
				lb.	oz.
Giant Pascal	Mar. 18	June 17	Sept. 9	20	
Paris Golden Yellow	" 18	" 17	" 9	16	
French Success	" 18	" 17	" 9	8	8
Noll Magnificent	" 18	" 17	" 9	18	
Evans Triumph	" 18	" 17	" 9	22	
Improved White Plume	" 18	" 17	" 9	22	
White Plume	" 18	" 17	" 9	14	8
Burpee Fordhook	April 20		Did not germinate.		

CABBAGE.

Although this has been an exceptionally dry season it has been a good one for cabbage. Large crops of a good quality were grown. We had no trouble with the Cabbage Maggot and the aphids came late, and though they were infected with them, the cabbage took no harm. The majority of the early cabbages were very healthy and roots were left in the ground after cutting the cabbage, with the result that they sprouted out nicely and some very nice small heads were cut as second crop in October. The early varieties did very well. Nofalt was best of the late varieties. Fottler Improved Brunswick was an excellent variety both in yield and flavour. On the three year average Flat Swedish was the largest producer with Extra Amager Danish Roundhead a good second.

Variety.	Date sown.	Date ready for use.	Yield per 10 heads.		Annual average yield from 10 heads for 2 years	
			lb.	oz.	lb.	oz.
Flat Swedish	April 6	July 31	58	12	69	14
Extra Amager Danish Roundhead	" 22	Aug. 18	59	12	67	6
Danish Summer Ballhead	" 6	" 15	51	12	52	12
Early Paris Market	" 6	July 21	16	4	32	14
Early Jersey Wakefield	" 6	" 24	19	2	....	
Fottler Improved Brunswick	" 6	Aug. 18	61	12	....	
Nofalt	" 6	July 31	41	12	....	
Copenhagen Market	" 22	Failure.				
Improved Amager Danish Roundhead	" 6	Aug. 15	Failure.			

SMALL FRUITS

Raspberries.—The best variety was the Cuthbert; it produced a good crop of firm, medium-sized, well-shaped berries. It should be a good commercial variety as it has a good flavour and excellent shipping qualities. It fruited from June 15 to July 16 and was earlier this year than usual. Superlative was a good second. The remaining varieties, White Queen and Fillbasket were not of much account either in amount of crop or quality.

Blackberries.—Snyder and Erie were the most successful blackberries and seemed to be able to throw off the attacks of the leaf-hopper and leaf-spot which affected the other varieties severely. Snyder produced well and fruited from July 12 to July 31. Erie produced a larger crop than Snyder and fruited from July 12 to August 2.

Black Currants.—Boskoop Giant was the best variety, with Victoria second. The crop was small this year as the bushes were only starting to yield.

Loganberries.—Like the early blackberries the Loganberries were attacked by leaf-hoppers and leaf-spot just as the fruit was ripening, spoiling what promised to be a fairly good crop.

FLOWERS.

List of Best Annuals.

Variety.	Began to bloom.	Bloom over.	Height.	Remarks.
			Inches.	
Alyssum, Little Dorrit, white	June 26	Aug. 27	10	Good.
" Little Gem, white	" 22	Oct. 30	18	Very good.
Leptosiphon hybrids, mixed	" 19	Sept. 29	6	"
Brachycome iberidifolia, blue	July 16	Oct. 6	18	"
Mignonette, sweet scented	June 16	" 6	12	Good.
Eschscholtzia, Californian mixed	" 14	" 16	30	"
Calendula officinalis	" 22	Sept. 22	24	Fair.
Linum grandiflorum	" 23	" 27	18	Good.
Acroclinium grandiflorum	" 18	Oct. 3	36	Very good.
Centranthus macrosiphon	" 27	Sept. 30	30	"
Godetia—Bridesmaid, Duchess of Albany, Apple Blossom, Double Rose				All very good.
Sweet Sultan, mixed	" 28	" 30	30	Very good.
Jacobaea, mixed				"
Amaranthus tricolor				Foliage very fine.
Gypsophila elegans	June 15	Sept. 16	18	Very good.
Balsam, mixed colours	" 27	Oct. 3	12	"
Browallia elata	" 24	Sept. 27	24	Good.
Chrysanthemum, Northern Star	July 10	Oct. 13	30	Very good.
Rudbeckia, Golden Sunset	" 11	Nov. 3	42	"
Nigella, Miss Jekyll	Aug. 7	Oct. 10	24	Good.
Clarkia elegans	June 29	Aug. 15	24	Very good.
Poppy, Shirley	" 15	July 30	5 ft.	Very good.
Cornflower, mixed	" 18	Sept. 30	4½ ft.	"
Larkspur—in varieties—Blue, Rosy, Scarlet and White.				All very good.
Coreopsis, mixed	July 1	Aug. 30	30	Very good for cutting.
Lupines, mixed	June 24	Sept. 6	30	"
Marigold, French	July 7	Oct. 3	2½ ft.	Very good for cutting.
Zinnia, mixed	June 11	Oct. 4	3 ft.	Very good.
Ageratum, blue	July 16	" 3	18 in.	Very good blue
Dianthus				Did extra well
Petunia, mixed	July 18	Sept. 10	2 ft.	Very good.
Lobelia, blue	June 14	" 11	4 in.	Good for edging.

All the above annuals did very well in spite of the dry weather and can be recommended to be grown as such for cutting and show purposes and for display in the garden.

Nasturtiums.—Both tall and dwarf varieties are exceedingly good. Phlox Drummondii did very well and bloomed until frost came in late December.

ORNAMENTAL TREES AND SHRUBS.

All the flowering shrubs and evergreens did very well this year. The former bloomed well and early and both made good growth, as did also the ornamental hedges. The Rhododendrons, after flowering profusely, made good growth and budded well for the following season, some varieties even blooming again in December. It is to be regretted that owing to the very severe weather snow and wind storms being exceptionally bad in the months of January and February of 1916 almost all of the Rhododendrons and Standard Hollies suffered most severely. The mildness of the early part of the winter in which their growth was unchecked no doubt made them more susceptible to the wind and the frost. The tender Hydrangeas, however, had been carefully protected with straw and sacking and came through the severe weather unscathed. The hemlock hedge was badly damaged by the storms and weight of snow which drifted into it. A few of the ornamental trees lost a few branches during the storm and one white pine was badly damaged, losing most of its top. Most of the trees lost a great number of twigs and small shoots due to the storms. All of the roses seem to have weathered the severe winter successfully and promise well for next season.

FLOWER SEED.

Flower seed saved on the Experimental Farm in 1914 and sown in 1915:—

Leptosiphon hybrids,—Did very well and proved to be equal to Suttons.

Candytuft, mixed,—There were no other varieties for comparison but they did very well.

Mignonette,—Seemed to be rather small in bloom.

Eschscholtzia (*Californian*).—Grew well but had few blooms.

Godetia, Apple Blossom, Double Rose, Scarlet Queen,—All did exceedingly well. Apple Blossom and Scarlet Queen were slightly mixed.

Bartonia, aurea,—Failure.

Clarkia, mixed,—Were equal to Sutton's Brilliant.

During the fall of 1914 seed from several of the flowers was saved and was sown this season with, on the whole, satisfactory results. Many of the varieties compared very favourably with those grown from the imported seed and there were only two, *Lychnis (Viscaria) cardinalis* and *Bartonia* which were a failure. Provided the harvesting season is favourable there seems to be no reason why home-grown seeds should not be as good producers as those obtained elsewhere.

EXPERIMENTAL STATION FOR VANCOUVER ISLAND, SIDNEY, B.C.

REPORT OF THE SUPERINTENDENT, LIONEL STEVENSON, B.S.A., M.S.

CHARACTER OF THE SEASON.

The winter of 1915 was exceptionally mild and dry, the spring remarkably early and warm, while the summer was one of the driest on record. The autumn was open and free from frost and snow, heavy rains set in during October and continued until late December. The precipitation during the summer months was not sufficient for the best development of plant life. The climatic conditions during January and February of 1916 were very severe on all plant life, and some tender foreign plants were killed by low temperatures. All foreign plants that survived, we now know to be hardy to twenty degrees of frost.

ORCHARDS.

Growth of the Orchard.—The trees planted late in the spring of 1914, survived the summer, became well rooted and in good condition generally to start 1915. The growth made during the past season has been remarkable for large and healthy wood development. Some varieties of plums made a growth of 6 feet, while pears both dwarf and standard made growth of from 2 to 4 feet. Medlars, quinces, apricots, almonds and nectarines all made growth of 3 to 4 feet. Sweet and sour cherries in variety and apples in variety did well with but few exceptions, nearly all varieties making growth of from 2 to 5 feet.

Number of varieties of	apples established in orchard			30
" "	sweet cherries established in orchard			41
" "	sour cherries	"	"	16
" "	standard pears	"	"	50
" "	dwarf pears	"	"	36
" "	plums	"	"	36
" "	peaches	"	"	6
" "	quince	"	"	8
" "	medlar	"	"	3
" "	apricot	"	"	14
" "	pomegranate	"	"	3
" "	nectarine	"	"	4
" "	almond	"	"	11
" "	citrus	"	"	17
" "	figs	"	"	24

Orchard tillage.—The entire orchard area was tilled with a Kimball cultivator from early spring until September. On September 2 the areas between trees were seeded with rye and vetch. This crop made excellent growth through the autumn. It will be turned under in May.

New Plantations during Season 1915.—A fig orchard of the following varieties was set: Agen, Angelique, Adriatic, Brown Turkey, Black Ischia, Brunswick, Col. di Signora Nigra, Celeste, Doree, Dauphine, Drap d'Or, Ladaro, Mission, Ronde Noire, Pastiliere, Royal Vineyard, Ronde Violette Hative, Smyrna, San Pedro White, Warren Brown Turkey, Wilson Smyrna, White Ischia, White Genoa.

Grapes.—A vineyard of the following varieties was set: Buckland Sweetwater, Black Hamburgh, Brant, Chasselas de Fontainebleau, Gros Colman, Lindley, Peabody, Brighton, Canada, Campbell Early, Delaware, Dattur de Beyreuth, Foster Seedling, Hartford, Trentham Black, Winchell, Vergennes, Moore Early, Foster Seedling.

Sweet Cherries.—This plantation was established in 1914 with 41 varieties, the majority of which were secured from Baltet Nursery Co., France. Most of the trees made excellent growth during the 1915 season, several varieties making from 50 inches to 72 inches growth. A number of varieties made less than 18 inches of growth, seemed tender to spray materials and subject to aphis injury, named as follows: Abbesse d'Oignies, Belle de Choisy, De Mezel, d'Annonay, Empress Eugenie, Emperor Francois, Gros Rouge, Gros Noir, Jaune de Buttner, May Duke, Pleureur, Reverchon. Black Aphis gave considerable trouble during the entire season on both sweet and sour cherries.

Sour Cherries.—Of the sixteen varieties planted in 1914, a large percentage made very satisfactory growth, sixty inches being the maximum attained by any variety. Those varieties that made a weak growth or died are listed as follows: Anglaise Tardive, Belle de Franconville, De Sauvigny, De Vaux, Griotte du Nord, Lemercier and Nouvelle Royale. The Montmorency proved more attractive to the aphis and their attendants than did any of the other varieties of sour cherries.

Medlars.—The four varieties of medlars planted in 1914 all made growths varying from 32 to 48 inches. The variety De Hollande proved the most vigorous grower.

Nectarines.—This plantation was established in 1914 with three varieties, and a fourth variety, the Early Violet, was added in 1915. The trees planted in 1914 made during the season from 54 to 75 inches of growth. The Boston, Lord Napier and the Stanwick varieties proved very susceptible to leaf curl.

Peaches.—This plantation was established in 1914 and made from 45 to 60 inches growth during 1915. Two varieties Alexander and Triumph proved more subject to leaf curl than the other varieties.

Plums.—Of the thirty-six varieties planted in the orchard during 1914, all but three made excellent growth, the maximum for any variety being 102 inches. The three varieties that did not make satisfactory growth are listed as follows: Ebersweier, Formosa and Gaviotta.

Prunes.—Of the three varieties of prunes established in 1914, all made satisfactory and uniform growth, the maximum growth for the Italian prune being 60 inches.

Pears.—The plantation of standard pears established during 1914 with fifty varieties, French and Canadian grown stock, made very satisfactory growth during the season of 1915. Many varieties bloomed, but were not permitted to fruit. All varieties were free from disease and very little aphis injury was recorded.

The following varieties proved the most vigorous and made more than 20 inches growth: Bosc, Bartlett, Kieffer, Louise Bonne, Souvenir de Congrès and Williams (Bartlett).

The following varieties made unsatisfactory growth: Marguerite Marillat and Royale Vendée.

Dwarf Pears.—The plantation of dwarf pears established during 1914 with thirty varieties, secured from Baltet Nurseries, France, all made satisfactory growth. Thirteen inches was the smallest amount of growth recorded, while several varieties made more than forty inches. Several varieties blighted but only one variety, the Doyenne d'Hiver, was attacked by aphis.

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Quinces.—The following varieties were added to the quince plantation during the year: Champion, Comina, Orange and De Portugal. The growth made during the season of 1915 by the French varieties of quinces that were planted during the spring of 1914 was remarkable. One variety, the De Bourgeaut, made a growth of 66 inches. All varieties with but one exception made a growth of 30 inches or more.

Apples.—This plantation was established in 1914 with 27 varieties of Standard apples and 3 varieties of crabs. The majority of the red fruit varieties made satisfactory and strong growth. The following varieties proved the most vigorous and resisted disease and insect injury: Delicious, Gravenstein, Grimes Golden, King David, King of Tompkins County, Lowland Raspberry, Monsieur Gladstone, McIntosh Red, Rome Beauty, Sweet Bough, Trenton, Transcendent, Wagener, and Winter Banana.

The following did not make as satisfactory progress: Cox Orange Pippin, Duchess of Oldenburg, Jonathan, Melba, Red Astrachan, Wealthy, and Yellow Transparent.

All varieties of crab-apples made excellent growth. The following additions were made to the apple orchard during 1915: Alexander, Blenheim Orange, Peasgood Nonsuch, Ribston Pippin and Spitzenberg.

Apricots.—This plantation was established in 1914 with 14 standard American and French varieties. The following additions were made during 1915: De Boulbon, Moorpark and Royal.

The growth of all apricot varieties was strong, the majority of the varieties making from 36 inches to 60 inches of growth. One French variety, the Magyar Legjob, made a growth of 72 inches.

Almonds.—The following varieties of almonds were secured from California and from France, and planted during the year: Hardshell, I.X.L., Jordan, King, Languedoc, Lewellyn, Ne Plus Ultra, Nonpareil, Paper Shell, Texas Prolific. All varieties did well and made a season's growth varying from 18 to 48 inches.

Experimental Nut Orchard.—The beginning of an experimental nut orchard was made in the planting of the following varieties of nut trees.

Grafted Walnuts: Juglans à Coque tendre, Fertile, Bijou a gros Fruit, Ordinaire, Mayette Rouge, Franquette on California Black, Franquette Vroomans, Mayette, De la St. Jean.

Grafted Chestnuts: *Castanea vulgaris,* Coubale, de Lyon, Ridgely, Rochester, Spanish.

Grafted Pecans: Pabst, Stuart, Van Deman.

Seedling Pecans: Mission, Illinois.

Hickory: Shellbark, Missouri Mammoth.

Filberts, *Corylus macrocarpa*: Fertile de Coutard, d'Angleterre, de Provence, Merveille de Bollwiller, Nottingham, Fertile, Emperor, A feuille pourpre, A feuille lacinae, Pellicule rouge, Gosford, Prolific, du Béarn, Commun, Calyculata, Avellana, Colurna, Macrocarpa, English Filbert,, du Chilly, Red Hazel, Barcelona, Kentish Cob, Purple Californian, Purple Spanish.

The Citrus Plantation.—The oranges, grape fruit and Limequat all made good growth during the summer. Three varieties of Satsuma oranges—Natsu-mikan, Unshiu and the Media Acida—blossomed, set and developed fruit which did not ripen, owing to unusual weather conditions during January. The following varieties were planted during 1915: Savage Seedling, Norton, Saunders Seedling, Cunningham, Colemans, Rusk Seedling, Sampson Tangelo, Limequat, Willets Seedling, Natsu-mikan, Media Acida.

All varieties suffered from the unusual weather; the tri-foliate varieties will make quick recovery as they were less injured than the other types.

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MISCELLANEOUS PLANTATIONS.

Holly Plantation.—An experimental holly orchard was set during 1914, the object being to determine the relative values of grafted stock and seedling stock, also to obtain data on costs of production, results from various cultural methods and systems of pruning.

Name.	Planted.	Stock.	No. of Trees.	No. bearing Fruit.	Weight of Crop.
Ilex Aquifolium..	1914	Grafted.	53	51	8 lb.
" "	1914	Seedlings.	47	11	Nil.

Lavender Plantation.—One-year seedling plants of *Lavendula vera* were set in 1913, and made 3 inches of growth that season and flowered between June 14 and August 18. During 1914 these plants made a growth of 4 inches and flowered from July 2 to October 21, producing 72 bunches. During 1915 the plants became more dense and made a growth of 8 inches, bloomed from June 12 to December, and produced 420 bunches of bloom. Number of plants 102, number of stalks of bloom per bunch 25 to 30, twenty bunches per pound.

Medicinal Plants.—A plantation of *Rhamnus Purshiana*—Cascara, was set in 1914, of two and three-year-old seedling trees collected in forest. Season's growth: 1914, 12 inches; 1915, 70 inches.

Tree and shrub types are all healthy and making splendid growth under cultivation.

Pomegranates.—The following varieties of pomegranates were secured from the California nursery and set.

Name.	Season's Growth.	
Mme. Legrelle..	6 inches	medium.
Double White..	16 "	strong.
Double Scarlet..	5 "	medium.

The following varieties of persimmons, were secured from the United States Bureau of Plant Industry:—

Persimmon (*Diospyros*).—Early Golden, Hicks, Ida, Ruby, Glenwood, Kawakami, Marion, Delmas, Josephine, Silky Fine.

The following varieties of Persimmons suffered from frost injury: Ida, Ruby, Silky Fine and Hicks.

Economic plants.—A plantation made up of the following economic plants was set: *Broussonetia papyrifera, Broussonetia Kajinoki, Camellia theifera* (Japanese tea), *Camellia theifera variegata, Cinnamomum Camphora, Eriobotrya japonica Tanaka, Eriobotrya japonica* (*Loquat.*), *Elaeagnus pungens, Elaeagnus umbellata, Elaeagnus longipes, Edgeworthia papyrifera, Rhus vernicifera, Rhus succedana.*

All the above varieties grew well during the season. The *Elaeagnus pungens* fruited.

The following suffered from frost injury during the cold period of January when subjected to 20 degrees of frost: *Camellia theifera, Camellia theifera variegata, Cinnamomum Camphora, Broussonetia papyifera and Broussonetia* Kajinoki.

SMALL FRUITS.

The small fruits plantation was established April 30, 1913, on heavy black loam soil containing a large percentage of clay.

Name of Variety.	Date of first picking.	Date of last picking.	Size of fruit.	Yield per acre Season 1915. lb.	ozs.
Red Raspberries—					
Cuthbert	June 9	Oct. 30	Medium	2,583	4
Fillbasket	" 10	July 9	Large	1,537	6
Superlative	" 10	" 9	Medium	693	2
Golden Queen	" 10	Oct. 16	Medium	3,755	4
Blackberries.					
Erie	July 17	Sept. 11	Large	6,225	2
Snyder	" 17	Aug. 14	Medium	2,595	14
Phenomenal	Blighted				
Mammoth	Blighted				
Black Currants.	First ripe fruit.		Size of fruit.	Yield 1915.	
Topsy	May 29		Large	2,510	4
Eagle	June 2		Medium	2,964	8
Victoria	" 5		Large	2,117	8
Boskoop Giant	" 1		Medium	4,719	..
Eclipse	" 26		Large	1,996	8
Magnus	" 1		Medium	3,448	8
Climax	" 1		"	4,477	..
Kerry	" 2		"	5,384	8
Clipper	" 2		"	1,936	..
Buddenborg	" 23		Large	3,993	..
Saunders	May 27		Medium	4,356	..
Collins Prolific	June 3		Large	2,268	12

Planted April 30, 1913.

Red Currants.					
Greenfield	May 28		Medium	1,996	8
Grape	June 1		Small	3,478	12
Cherry	May 28		Medium	998	4
Perfection Red	" 28		Large	3,040	2
Admirable	" 28		Large	544	8
Victoria	" 20		Medium	3,267	..
Red Cross	" 28		Medium	4,840	..
Cumberland	" 29		Small	2,843	8
Red Dutch	" 20		Small	816	12
Rankins Red	" 20		Small	1,817	..
Wilder	" 30		Medium	2,208	4

Planted April 30, 1913.

White Currants.					
White Cherry	June 8		Medium	1,663	12
Large White	" 12		Small	1,936	..
White Grape	" 3		Large	1,694	..

Planted April 30, 1913.

Gooseberries.	Mildew.	Ripe.	Size.	Yield per acre,	
Industry	No	June 18	Large	1,815	..
Champion	No	" 26	Medium	3,388	..
Victoria	No	" 18	Large	1,936	..
Houghton	No	" 18	Small	1,573	..
Whitesmith	Yes	" 19	Medium	786	..
Red Jacket	No				

Set April 30, 1913.

Strawberries.	Ripe.	Size.		Yield per acre,	
Sharpless		June 5	Medium	1,272	14
Paxton		" 5	Large	8,250	..
Magoon		" 29	Large	5,327	2

The following varieties were set in experimental blocks during October, 1915: Julia, Virgilia, Cassandra, Mariana, Desdemona, Valeria, Cordelia, Portia, Splendid, Senator Dunlap, Warfield No. 2, Royal Sovereign and Triomphe de Ghent.

SIDNEY.

VEGETABLES.

RESULTS OF VARIETY TESTS AND CULTURAL EXPERIMENTS WITH GARDEN VEGETABLES FOR SEASON 1915.

RHUBARB.

The following varieties of rhubarb have been established: Hobday Giant, Monarque, Prima Donna, Linnaeus and Early Raspberry.

GARDEN PEAS.—Comparison of Early *versus* Late Sowing.

Variety.	Date of seeding.	Length of row.	Ready for use.	Height.		Yield.	
				Feet.	Inches.	Lb.	oz.
Quite Content	March 9	30	July 2	6		42	8
Telephone	" 9	30	June 26	6	9	43	4
Heroine	" 9	30	" 26	4	6	47	..
Quite Content	April 9	30	July 16	6	..	16	8
Telephone	" 9	30	" 9	6	..	19	10
Heroine	" 9	30	" 9	4	9	23	10

From the above table it can be seen that the March 9 sowings gave more than double the yield of the sowings of April 9. The height of the plants of the April 9 sowings was nearly the same in each variety as with the March 9 sowings. The plants were as vigorous, but the moisture had gone from the soil.

VARIETY TEST.

Variety.	Date of seeding.	Length of rows.	Ready for use.	Height.		Green yield from one 30 foot row.		Yield ripe seed one 30 foot. row	
		Feet.		Ft.	Ins.	Lb.	oz.	lb.	oz.
Quite Content	April 9	30	July 16	6	..	16	8	3	2
Telephone	" 9	30	" 9	6	..	19	10	4	12
Heroine	" 9	30	" 9	4	9	23	10	5	2
Advancer	" 9	30	" 9	4	..	29		4	15
Dainty Duchess	" 9	30	" 9	6	..	25	12	5	2
Sutton Excelsior	" 9	30	" 2	2	6	17	2	3	7
Gradus	" 9	30	" 2	6	..	18	2	2	10
Gregory Surprise	" 9	30	" 26	4	9	16	..	2	12
Stratagem	" 9	30	July 9	3	6	22	14	2	13
Juno	" 9	30	" 9	3	6	23	9	5	3
Lincoln	" 9	30	" 9	3	6	21	2	3	10
Premium Gem	" 9	30	" 9	2	6	17		3	2
American Wonder	" 9	30	June 26	1	6	13	10	3	4
English Wonder	" 9	30	" 26	1	6	10	9	1	7

From the foregoing table it will be noted that for the production of green peas the following six varieties lead: Advancer, Dainty Duchess, Heroine, Telephone, Juno, and Stratagem. These same varieties all proved to be heavy yielders of ripe seed, a factor of importance to intending seed growers.

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CORN.—Variety Test.

Variety.	Date of planting.	Length of row.	Ready for use.	Height.		Yield.	Green ears.
		ft.		ft.	in.	lb.	oz.
White Squaw	May 3	30	Aug. 14	4	6	19	2
Golden Bantam	" 3	30	" 14	6	..	24	2
Early Fordhook	" 3	30	" 21	6	2	41	2
Early Dawn	" 3	30	" 21	5	6	24	
Early Iowa	" 3	30	" 21	4	10	18	
Perkins Extra Early	" 3	30	" 21	6	5	38	10
Early Malcolm A	" 3	30	" 21	4	5	15	8
Extra Early Adams	" 3	30	" 21	6	10	43	12
Early Malcolm B	" 3	30	" 21	4	6	12	
Malakoff	" 3	30	" 21	4	6	15	8
Metropolitan	" 3	30	Sept. 4	7	..	27	
Pocahontas	" 3	30	Aug. 21	6	6	36	11

TOPPING *versus* not Topping.

Variety.	Date of Seeding.	Length of row.	Date of Bloom.	Ready to use.	Height.		Yield from the Entire Plants.		Yield from Topped Plants.	
					ft.	in.	lb.	oz.	lb.	oz.
White Squaw	May 3	30	June 6	Aug. 14	4	6	19	2	22	10
Golden Bantam	" 3	30	" 26	" 28	6	..	24	11	26	
Early Fordhook	" 3	30	" 20	" 21	6	2	41	2	34	
Early Dawn	" 3	30	" 20	" 21	5	6	24	..	23	
Early Iowa	" 3	30	" 20	" 21	4	10	18	..	17	12
Perkins Extra Early	" 3	30	" 26	" 28	6	5	38	10	34	
Early Malcolm A	" 3	30	" 13	" 21	4	5	....	....	20	8
Extra Early Adams	" 3	30	" 22	" 21	6	10	43	12	36	2
Early Malcolm B	" 3	30	" 16	" 21	4	6	12	..	16	
Malakoff	" 3	30	" 18	" 21	4	6	15	8	17	9
Metropolitan	" 3	30	July 3	Sept. 4	7	.	27	..	27	8
Pocahontas	" 3	30	June 22	Aug. 21	6	6	36	11	29	8

NOTE.—The untopped plants gave a greater return of edible green corn.

GARDEN BEETS.—Variety Test.

Variety.	Date of sowing.	Length of row.	Ready for use.	Yield.	
		ft.		lb.	oz.
Meteor	April 17	30	July 6	68	8
Ruby Dulcet	" 17	30	" 13	57	8
Eclipse	" 17	30	" 13	47	12
Cardinal Globe	" 17	30	" 6	72	8
Crosby Egyptian	" 17	30	" 6	67	4
Black Red Ball	" 17	30	" 20	40	8

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PARSNIPS—Variety Test.

Name.	Date of sowing.	Length of row.	Ready for use.	Yield.	
		ft.		lb.	oz.
Intermediate	April 17	30	Oct. 6	32	0
Improved Hollow Crown	" 17	30	" 6	26	8

CARROTS—Variety Test.

Name.	Date of seeding.	Length of row.	Ready for use.	Yield.	
		ft.		lb.	oz.
Early Scarlet Horn	April 17	30	Aug. 2	15	12
Half long Chantenay	" 17	30	" 2	49	12
Improved Danvers	May 15	30	" 17	20	8
Long Scarlet Nantes	" 15	30	" 17	25	

Note heavy yield of Half Long Chantenay.

PEPPERS—Variety Test.

Name.	Date of seeding.	Length of row.	Ready to use.	Yield.	
		ft.		lb.	oz.
Hot Bell	April 23	10	Sept. 16	0	9
Long Red Cayenne	" 23	30	" 16	2	15
Red Chili	" 23	30	" 27	1	3
New Neapolitan	" 23	30	" 12	8	4

Note heavy yield of New Neapolitan.

BEANS—Test of Varieties—For Green Beans and for Seed.

Name of variety.	Date of sowing.	Length of row.	Ready for use.	Height	Yield of green beans.		Colour of Seed.	Size.	Amount of seed.	
		ft.		in.	lb.	oz.			lb.	
Extra Early Valentine	May 1	30	July 16	12	16	12	Red and white	Medium	2	4
Extra Early Refugee	" 1	30	" 16	12	19	1	Purple and white	Medium	2	5
Bountiful	" 1	30	" 16	12	21	1	Yellow	Large	2	7
Valentine Wax	" 1	30	" 16	10	17	6	Red and white	Medium	2	4
Wardwell Kidney Wax	" 1	30	" 16	10	17	1	Purple and white	Very large	2	1
Fordhook Favourite	" 1	30	" 16	13	11	1	Purple and white	Large	1	13
Refugee or 1,000 to 1	" 1	30	" 31	14	19	7	Purple and white	Medium	3	1
Grennell Rustless Wax	" 1	30	" 16	10	20	..	Purple and white	Medium	2	10

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LETTUCE—Test of Varieties.

Name.	Date of seeding.	Length of row.	Ready for use.	Weight of Yield.	
		ft.		lb.	oz.
Dreer All Heart	April 26	15	June 29	16	8
Iceberg	" 26	15	July 2	16	2
Imp Hanson	" 26	15	June 30	13	12
Grand Rapids	" 26	15	" 22	9	13
Giant Crystal Head	" 26	15	July 2	11	1

ONIONS—Test of Varieties.

Name.	Date of seeding.	Length of row.	Date of Harvest.	Weight of yield.	
		ft.		lb.	oz.
White Globe	April 17	30	Oct. 6	4	4
Yellow Globe Danvers	" 17	30	" 6	4	12
Yellow Globe	" 17	30	" 6	8	12
Dark Red Beauty	" 17	30	" 6	6	
Red Globe	" 17	30	" 6	8	12
Giant Red Wethersfield	" 17	30	" 6	8	
Red Wethersfield	" 17	30	" 6	9	4

CAULIFLOWER—Test of Varieties.

Name.	Date of seeding.	No. of plants set in 2 rows.	Ready to use.	Yield.
		ft.		
Early Snowball	April 29	40	Aug. 17	26 good heads, small but compact and handsome.
Danish Giant	" 29	40	" 21	32 good heads, medium size, very compact.
Improved Early Dwarf Erfurt	" 29	40	" 17	12 good heads, medium size, compact dwarf grower

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CABBAGE—Test of Varieties.

Name.	Date of seeding.	No. of plants set.	Ready to use.	Weight of 10 Heads.
				lb.
Improved Paris Market	April 29	40	Aug. 26	19
Early Jersey Wakefield	" 29	40	" 26	22½
Copenhagen Market	" 29	40	" 26	30
Nofalt	" 29	30	Sept. 7	27
Danish Summer Ballhead	" 29	30	Oct. 16	80
Flat Swedish	" 29	30	" 16	80
Improved Amager Danish Roundhead	" 29	30	" 16	80
Extra Amager Danish Ballhead	" 29	30	" 16	80
Fottler Improved Brunswick	" 29	30	Sept. 27	70
Red Danish Delicatesse	" 29	30	Oct. 16	45
Red Danish Stonehead	" 29	30	" 16	42½

TOMATOES.—Variety test—Pruned to one stem (Jersey System).

Name.	Source of Seed.	Date of seeding.	Date of planting.	Number of Plants.	Date of Ripening.	Date of last picking	Yield Ripe.		Yield Green.	
							lb.	oz.	lb.	oz.
Extremely Early	Home Grown.	April 10	May 17	5	Aug. 9	Oct. 7	20	1	6	13
Chalks Early Jewel	"	" 10	" 17	5	" 9	" 7	21	11	12	1
Jack Rose	"	" 10	" 17	5	" 9	" 7	18	11	5	12
Florida Special	"	" 10	" 17	5	" 9	" 7	28	1	10	..
Sunnybrook Earliana	"	" 10	" 17	5	" 9	" 7	13	..	3	10
Earliest Round XXX	"	" 10	" 17	5	" 4	" 7	18	4	9	8
Prosperity	"	" 10	" 17	5	" 4	" 7	20	4	7	10
N. Adironack Earliana	"	" 10	" 17	5	" 4	" 7	25	3	9	..
Alacrity	"	" 10	" 17	5	" 2	" 7	25	15	7	..
Extra Early Wealthy		" 10	" 17	5	" 12	" 7	13	13	4	11
Prosperity		" 10	" 17	5	" 9	" 7	17	14	5	7
N. Adironack Earliana		" 10	" 17	5	" 9	" 7	15	4	7	..
Chalks Early Jewel		" 10	" 17	5	" 12	" 7	19	4	7	..
Bonny Best		" 10	" 17	5	" 2	" 7	15	..	4	7
Round Scarlet XXX		" 10	" 17	5	July 31	" 7	14	10	7	..
Jack Rose		" 10	" 17	5	Aug. 14	" 7	23	5	16	..
Florida Special		" 10	" 17	5	" 9	" 7	29	12	8	..
Alacrity	12a C.E.F.	" 10	" 17	5	" 9	" 7	20	..	7	..
"	14a C.E.F.	" 10	" 17	5	" 14	" 7	8	3	4	3
"	15a C.E.F.	" 10	" 17	5	" 6	" 7	17	15	5	8
"	12b C.E.F.	" 10	" 17	5	" 10	" 7	17	..	7	..
"	14b C.E.F.	" 10	" 17	5	" 3	" 7	29	5	7	..
"	23b C.E.F.	" 10	" 17	5	" 3	" 7	22	..	7	..

TOMATOES.—Methods of starting plants—Plants raised in cold frame.

Transplanted once in cold frame 3 inches by 3 inches and then planted into the field.

Name.	Date seeded.	Date Transplanted.	Date planted in field.	Date of Ripening.	No. of Plants.	Yield Ripe.		Yield Green.	Total.	
						lb.	oz.	lb.	lb.	oz.
Sunnybrook Earliana	April 16	May 29	June 17	Aug. 25	25	93	6	76	169	6
Bonny Best	" 16	" 29	" 17	" 27	25	44	..	171	215	..

Transplanted once in cold frame, then grown in strawberry punnets, planted in field at later date.

Name.	Date Seeded.	Date Transplanted.	Date planted in berry boxes.	Date planted in field.	Date of Ripening.	No. of Plants.	Yield Ripe.	Yield Green.	Total.
							lb.	lb.	lb.
Sunnybrook Earliana	April 16	May 29	June 17	July 5	Aug. 26	25	52	70	122
Bonny Best	" 16	" 29	" 17	" 5	" 31	25	26½	125	151½

TOMATOES.—Cultural Experiment—with two varieties.

Bush System. No pruning whatever.

Name.	Date of Sowing.	Date of Planting.	Date of Ripening.	Height.	No. of Plants.	Yield Ripe.		Yield Green.		Total.	
				in.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana	April 16	June 16	Aug. 25	14	25	108	5	143	..	251	5
Bonny Best	" 16	" 16	" 31	11	25	53	7	265	..	318	7

Saanich System. Plant pinched just above first truss of bloom, 5 laterals being allowed to grow, these laterals all having sub-laterals removed, and left growing in bush form.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield Green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana	April 16	June 16	Aug. 25	10	25	64	5	106	..	170	5
Bonny Best	" 16	" 16	" 31	11	25	37	15	161	..	198	15

Jersey System. Plants pruned to one stem and tied to stake 5 feet long, all laterals removed.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana	April 16	June 16	Aug. 27	18	25	53	12	39	..	92	12
Bonny Best	" 16	" 16	" 29	30	25	63	11	56	12	120	7

SIDNEY.

Wire System. Plants pruned to one stem and tied to wires 12, 30, and 40 inches high.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield Green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 16.	June 16..	Aug. 25..	26	25	60	20	37	..	97	2
Bonny Best......... ..	" 16	" 16..	" 31..	26	25	60	15	63	12	124	11

TOMATO EXPERIMENTS.—*Pruning to two stems.*

Pruned to two stems and tied to stakes 5 feet long, laterals removed as soon as possible.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 16..	June 16..	Aug. 28..	30	25	70	10	63	..	133	10
Bonny Best...........	" 16..	" 16..	" 27..	40	25	49	2	78	..	127	2

Pruned to two stems and tied to wires 12, 30, and 48 inches above ground.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield Green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 16	June 10.	Aug. 26	28	25	83	..	55	..	138	..
Bonny Best...........	" 16.	" 10.	" 27	38	25	74	8	102	..	176	8

Pruned to two stems and removing half foliage at one operation, tied to stakes.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 16..	June 16..	Aug. 25..	34	25	90	11	52	..	142	11
Bonny Best...........	" 16..	" 16..	" 28..	42	25	74	3	101	..	175	3

SIDNEY.

Pruned to two stems and removing extreme leaflet at first operation and extreme two leaflets later.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield Green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 16..	June 16..	Aug. 27..	28	25	102	12	61	..	163	12
Bonny Best...........	" 16..	" 16..	" 28..	40	25	69	12	125	..	194	12

TOMATOES.—Test of Varieties.

Pruned to one stem, and removing half foliage at one operation, tied to stakes.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 12..	June 16..	Aug. 27..	24	25	61	..	28	..	89	..
Bonny Best...........	" 12..	" 16..	" 31..	40	25	61	11	46	8	108	3

Pruned to one stem, and removing extreme leaflet at first operation, the extreme two leaflets at later date.

Name.	Date of sowing.	Date of planting.	Date of ripening.	Height.	No. of plants.	Yield ripe.		Yield Green.		Total.	
				Inches.		lb.	oz.	lb.	oz.	lb.	oz.
Sunnybrook Earliana..	April 12..	June 16..	Aug. 28..	24	25	41	9	19	..	60	9
Bonny Best...........	" 12..	" 16..	" 31..	36	25	57	11	42	12	100	7

SIDNEY.

TOMATO EXPERIMENT.—Test of Systems of Ripening, applied to Green Tomatoes.

Twelve systems of ripening were tried. Ten full grown green tomatoes and ten fully developed tomatoes showing a trace of colour. All tomatoes were of the "Bonny Best" variety. Temperatures taken twice daily. Date of commencing the experiment, October 25.

Method of Ripening.	Condition of ripeness at start.	Number used.	Number. ripened	Number. diseased	Mean Temp. for period.	Date of Ripening.
1. Placed in the sun, glass underneath........	Green.......	10	Frozen..	.....	....	....
" "	Trace of red	10	"	....	....	....
2. Placed in the shade, position moderately warm..............................	Green.......	10	7	3	48·3°	Nov. 27
Placed in the shade, position moderately warm..............................	Trace of red	10	8	2	48·7°	" 20
3. Placed in closed box without ventilation ..	Green.......	10	4	6	46·2°	Dec. 18
" " ..	Trace of red	10	9	1	48·0°	" 4
4. Placed on boards in cold frame, sash on, ventilation given if temperature went above 55..........................	Green......	10	3	7	42·0°	" 11
Placed on boards in cold frame, sash on. ventilation given if temperature went above 55..........................	Trace of red	10	10	0	47·0°	Nov. 6
5. Placed on boards in cold frame, sash on, ventilation given if temperature went above 55. Boards set up on bricks...	Green.......	10	5	5	42·0°	Dec. 11
Placed on boards in cold frame, sash on, ventilation given if temperature went above 55. Boards set up on bricks...	Trace of red	10	10	0	50·0°	" 11
6. Placed on straw in cold frame, ventilation given if temperature went above 55. Straw on soil......................	Green.......	10	5	5	43·5°	Nov. 20
6. Placed on straw in cold frame, ventilation given if temperature went above 55. Straw on soil......................	Trace of red	10	10	0	48·90°	" 3
7. Placed on straw in cold frame, sash on, ventilation given if temperature went above 55. Straw on raised boards....	Green.......	10	7	3	42·0°	Dec. 11
Placed on straw in cold frame, sash on, ventilation given if temperature went above 55. Straw on raised boards....	Trace of red	10	10	0	47·0°	Nov. 6
8. Placed in Buckwheat husks, closed box, kept at moderate temperature.........	Green.......	10	10	0	49·5°	" 13
Placed in Buckwheat husks, closed box, kept in moderate temperature.........	Trace of red	10	6	4	47·7°	Dec. 11
9. Placed in a closed box, each fruit being wrapped in paper, kept at moderate temperature..........................	Green.......	10	4	6	48·0°	" 4
9. Placed in a closed box, each fruit being wrapped in paper, kept at moderate temperature..........................	Trace of red	10	7	3	48·7°	Nov. 20
10. Plants hung in moderately warm building.	Green.......	36	36	0	47·7°	Dec 11
" " .	Trace of red	6	plants, fruit fell off before ripening.			
11. Placed in closed box, 5 tiers of fruit, moderate temperature......................	Green.......	10	4	6	48·0°	Dec. 4
Placed in closed box, 5 tiers of fruit, moderate temperature......................	Trace of red	10	0	10	....	....
12. Placed in closed box, with straw between each layer, moderate temperature....	Green.......	10	7	3	47·2°	Dec. 22
Placed in closed box, with straw between each layer, moderate temperature....	Trace of red	10	10	0	50·4°	Nov. 6

NOTE.—In the ripening of tomatoes, those placed on boards and straw ripened the quickest. Care must be taken to put the fruits away dry, and they must be kept dry. Slugs become troublesome if conditions are damp.

Method 10 gives very satisfactory results if the plant contains considerable moisture and the fruit is green; plants with partly ripened fruit are not a success.

Method 12 gave splendid results, fruits were firm and of fine quality.

SIDNEY.

TEST OF VARIETIES.—*Pumpkins, Watermelon, Squash, Cucumber.*

Variety.	Date of Seeding.	Number of Hills.	Date of bloom.	Ready to use.	Yield.	
					lb.	oz.
Pumpkin, Sweet as Sugar	May 12	3	June 13	Oct. 7	88	4
“ Jumbo	“ 12	3	“ 16	“ 7	50	8
“ Large Field	“ 12	3	“ 12	“ 7	49	..
Watermelon, Red Citron	“ 12	3	“ 17	“ 7	34	8
Muskmelon, Earliest ripe	“ 12	3	“ 20	“ 7	4	8
“ Imp. Rocky Ford	“ 12	3	“ 20	“ 7	7	12
Squash White Bush Marrow	“ 12	3	“ 12	June 31	75	4
“ White Bush Scallop	“ 12	3	“ 12	July 14	61	3
“ Delicious	“ 12	3	“ 26	Sept. 11	21	12
“ Long White Vegetable Marrow	“ 12	3	“ 6	June 31	80	7
“ Golden Hubbard	“ 12	3	“ 21	Sept. 11	8	3
“ Summer Crookneck	“ 12	3	“ 20	July 14	27	3
“ Delicata	“ 12	3	“ 31	Sept. 11	24	8
Cucumber Extra Early Russian	“ 12	3	“ 12	July 7	11	2
“ Peerless Imp. White Spine	“ 12	3	“ 12	“ 14	11	12
“ Cool and Crisp	“ 12	3	“ 12	“ 14	12	4
“ Davis Perfect	“ 12	3	“ 12	“ 14	8	12
“ Giant Pera	“ 12	3	“ 12	“ 14	17	5
“ Fordhook Famous	“ 12	3	“ 12	“ 14	8	10
“ Prize Pickle	“ 12	3	“ 12	“ 28	5	..

CULTURAL EXPERIMENTS.—Thinning to different distances with Carrots, Beets and Parsnips.

Name.	Date Seeded	Length of row.	Thinned.	Ready to use.	Yield.		Remarks.
		Feet.	Inches.		lb.	oz.	
Chantenay Carrot	April 24	33⅓	1½	July 26	43	8	Very desirable.
“	“ 24	33⅓	2	“ 26	42	4	“
“	“ 24	33⅓	3	“ 26	33	4	Little too large.
Early Model Beet	“ 24	33⅓	2	“ 20	40	.	Very fine, best shape, firm.
“	“ 24	33⅓	3	“ 20	50	8	Smooth, most uniform.
“	“ 24	33⅓	4	“ 26	36	..	Firm and of good appearence.
Hollow Crown Parsnip	“ 24	33⅓	2	....	20	4	
“	“ 24	33⅓	3	....	20	4	
“	“ 24	33⅓	4	....	16	8	

EXPERIMENTS with Drought-resisting Lettuce—to find which variety keeps in marketable condition longest.

Name.	Date of Seeding.	Length of row.	Ready to use.	Commence to seed.
		Feet.		
Dreer All Heart	April 17	30	June 29	July 20
Iceberg	“ 17	30	July 2	Aug. 10
Imp. Hanson	“ 17	30	June 30	Aug. 3
Grand Rapids	“ 17	30	“ 22	July 26
Giant Crystal Head	“ 17	30	July 2	Aug. 6

SIDNEY.

Iceberg and Giant Crystal Head proved the best under dry conditions.

Cultural Experiment for Protection from Cabbage Maggots.—Two varieties of Cabbage and two varieties of Cauliflower used in this experiment. Tar paper discs and cheese cloth covering methods were used. Every third row unprotected.

Name of variety.	Date of seeding	Number of plants.	Date of planting.	Treatment.	Affected by Maggot	Died from other causes.	Matured.
Cauliflower Early Snowball........	April 29	25	July 2	None...........	2	2	21
" "	" 29	25	" 2	Tar paper discs.	0	1	24
" "	" 29	25	" 2	Cheese cloth....	0	12	13
" Imp Early Dwarf Erfurt	" 29	25	" 2	None...........	2	0	23
" " "	" 29	25	" 2	Tar paper discs.	0	3	22
" " "	" 29	25	" 2	Cheese cloth....	0	8	17
Cabbage Early Jersey Wakefield..	" 29	25	" 2	None...........	0	0	25
" " " ..	" 29	25	" 2	Tar paper discs.	0	0	25
" " " .	" 29	25	" 2	Cheese cloth....	0	2	23
" Copenhagen Market.....	" 29	25	" 2	None...........	0	0	25
" "	" 29	25	" 2	Tar paper discs.	0	1	24
" " "	" 29	25	" 2	Cheese cloth....	0	4	21

The four plants in the entire area affected, were of those that received no treatment.

POTATO EXPERIMENTS.

Sprouted versus Unsprouted.

Variety.	Treatment.	Date of Planting.	Yield per acre	
			Tons	pounds.
American Wonder..	Unsprouted...	May 7...	4	1,668
" "	Sprouted......	" 7...	7	1,576

Note increased yield from sprouted seed.

Level Cultivation versus Hilled.

Variety.	Treatment.	Date of planting.	Yield per acre.	
			Tons	pounds
Late Puritan............	Hilled after first cultivation.....	May 7...	7	1,312
"	Level, four cultivations...... ..	" 7...	6	672

Note increased yield from hilling.

The dates of planting for all potato work proved much too late for an abnormal season. The experience of the season indicates that potato culture on the light soils must begin with the planting as soon as the soil is in good condition to till.

Sidney.

DIFFERENT Dates of Planting. Soil, light loam.

Variety.	Date of Planting.	Yield per acre	
		Tons.	Lb.
Early Norther	May 6	2	488
"	" 20	1	1960
"	June 3	1	640
"	" 17	..	1,748
"	July 2	..	792
"	" 19.	..	396

Note the poor yields obtained from late plantings. The percentage of marketable potatoes also decreased with the late plantings. If results are to be obtained in potato growing on light soils, the plantings must be sufficiently early that the growing plant may receive the benefit of all moisture there is in the soil.

KIND of set best suited to light soils of district.

A. Variety and type used "The Factor", buds from seed end only.

Type of Set.	Yield per acre.	
	Tons.	Lb.
1. Whole small potato under two inches either way, average weight of set, 1 and ⅙ ounces	2	1,676
2. Set from medium to large potato, cut to one bud, average weight 1 ounce	2	488
3. Set from medium to large potato cut to two buds, average weight ⅚ ounce	2	1,544
4. Set from medium to large potato cut to three or more buds, average weight 1¼ ounces	2	1,550

B. Variety and type used "Dalmeny Hero", buds from seed end to base.

1. Whole small potato under two inches either way, average weight of set 1 and ⅙ ounces	2	92
2. Set from medium to large potato cut to one bud, average weight 1 ounce	2	756
3. Set from medium to large potato cut to two buds, average weight ⅚ ounce	2	1,018
4. Set from medium to large potato cut to three or more buds, average weight 1¼ ounces	2	1,802

AUTUMN PLANTING.

This experiment was conducted to determine if any gain of time could be made over spring planting.

Variety.	Date of Planting.	Growth Started.	Ready to Market.	Ripe.	Yield per acre.	
					Tons.	Pounds.
Early Hebron	Oct. 17	Mar. 22	June 25	July 26	3	552
Early Rose	" 17	" 22	" 25	" 26	2	464
Manistee	" 17	" 22	" 25	" 26	3	292
Eureka Extra Early	" 17	" 22	" 20	" 21	2	1,720
Houlton Rose	" 17	" 22	" 23	" 21	4	118
Rochester Rose	" 17	" 22	" 25	" 26	3	1,128
Morgan Seedling	" 17	" 29	" 30	" 26	4	1,174
Everett	" 17	" 22	" 25	" 26	3	424
Vick Extra Early	" 17	" 29	" 20	" 21	2	1,544
Reeves Rose	" 17	" 22	" 25	" 26	2	884
Burpee Extra Early	" 17	" 22	" 20	" 21	1	1,300
Early Six Weeks	" 17	April 1	" 20	" 21	1	1,000
Early Ohio	" 17	" 6	" 25	" 26	1	1,168

The only advantage shown by autumn planting was that the work was done at a period of the year when labour pressure was not great. Early spring planting, with well sprouted seed, would give a marketable potato at an earlier date than the autumn planted seed.

TEST OF VARIETIES.

Listed in order of productiveness for season 1915:—

1. Table Talk.
2. Irish Cobbler.
3. The Factor.
4. Manistee.
5. Conquering Hero.
6. Dobbie Prolific.
7. Houlton Rose.
8. Dreer Standard.
9. Late Puritan.
10. Money Maker.
11. Vick Extra Early.
12. Gold Coin.
13. Up-to-date.
14. American Wonder.
15. Sir Walter Raleigh.
16. Empire State.
17. Bovee.
18. Vermont Gold Coin.
19. Morgan Seedling.
20. Carman No. 1.
21. Dalmeny Beauty.
22. Rochester Rose.
23. New Queen.
24. White City.
25. Early White Albino.
26. Dalmeny Hero.
27. Reeves Rose.
28. The Scott.
29. Scottish Triumph.
30. Early Rose.
31. Snow.
32. Hard to Beat.
33. Everett.
34. Early Hebron.
35. Early Moonlight.
36. Carman No. 3.
37. Clyde.
38. Early Norther.
39. Early Six Weeks.
40. Pan American.
41. Early May.
42. Todd Wonder.
43. Champion.
44. Early Ohio.
45. Burpee Extra Early.
46. Delaware.
47. Eureka Extra Early.

SIDNEY.

BULBS.

EXPERIMENT OF SCOOPING AND SCORING BULBS FOR MOTHER BULBS.

Four varieties of tulips, three of daffodils and three of hyacinths were selected or this experiment.

The tulip and daffodil bulbs averaged 1 ounce in weight, while the hyacinth bulbs veraged less than 3 ounces. Twelve tulip bulbs were used in each method, while but ix of each of the varieties of daffodils and but three of hyacinths were tested.

All scoring was done with a knife, from four to six cuts made in the bulb according o size and shape. The scooping of the tulip and daffodil bulbs was done with a drill, vhile a knife was used for the same operation on the hyacinth bulbs. After scooping nd scoring the bulbs were set in moist sand in a cold frame where they remained for 119 days, July 19 to November 16. After the end of this period they were lifted, the ncrease of bulblets was counted and then reset in the field to develop. The scoring rocess gave the greatest increase of bulblets with tulips and daffodils while scooping ave the largest increase with hyacinths.

Variety.	Treatment.	Increase in bulblets per bulb.
Tulip Duchesse de Parma	Scooped	5
" " "	Scored	16
" Chrysolora	Scooped	7
" "	Scored	12
" Picotee	Scooped	3
" "	Scored	9
" La Candeur	Scooped	9
" "	Scored	35
Daffodil Frank Miles	Scooped	16
" " "	Scored	38
" Horsfieldi	Scooped	10
" "	Scored	20
" incomparabilis	Scooped	11
" "	Scored	32
Hyacinth Madame Van der Hoop	Scooped	32
" " " "	Scored	20
" Enchantress	Scooped	57
" "	Scored	14
" King of the Blues	Scooped	80
" " "	Scored	24

Sidney.

SIDNEY.

Test of Varieties of Bulbs—Home grown *versus* Imported and Locally grown.

Name.	Source.	Number planted.	Quality	Date of planting.	Increase.			Total.	Vigor.	Width of flower.	Height.	Began to flower.	Full bloom.	Bloom over.
					1st	2nd	3rd			inch.	inch.			
Tulip Murillo	Home grown	51	Very good	Oct. 24	54	53	35	142	1	5½	12	Mar. 29	April 10	May 7
Tulip Murillo	Imported	102	Good	" 24	116	142	73	331	2	5¼	12	April 8	April 19	May 14
Tulip Pottebakker White	Home grown	51	Very good	" 24	43	31	51	124	2	6	12	Mar. 22	Mar. 29	April 27
Tulip Pottebakker White	Imported	102	Very good	" 24	107	87	83	277	1	6¼	11	Mar. 29	April 8	May 1
Tulip Thomas Moore	Locally grown	100	Excellent	" 24	100	79	54	233	1	6¾	12	April 1	April 15	May 4
Tulip Thomas Moore	Imported	100	Excellent	" 24	112	255	139	506	2	6¼	12	April 8	April 21	May 7
Tulip Couronne d'or	Home grown	100	Excellent	" 24	100	110	130	340	1	5¾	13	Mar. 29	April 8	May 6
Tulip Couronne d'or	Imported	100	Excellent	" 24	107	189	141	437	1	5½	10	April 6	April 19	May 14
Tulip Imperator rubrorum	Home grown	100	Excellent	" 24	100	87	149	336	1	5¼	10	Mar. 29	April 8	May 14
Tulip Imperator rubrorum	Imported	100	Excellent	" 24	104	216	164	484	2	5¼	9	April 6	April 19	May 14
Tulip Joost Van Vondel, white	Home grown	100	Very good	" 24	88	27	55	170	2	¼	10	Mar. 29	April 6	May 1
Tulip Joost Van Vondel, white	Imported	100	Very good	" 24	101	54	26	181	1	7½	10	April 1	April 10	May 3
Tulip Cottage Maid	Home grown	100	Very good	" 24	132	123	141	396	1	7	10	Mar. 29	April 6	May 1
Tulip Cottage Maid	Imported	100	Very good	" 24	100	97	93	290	2	5¼	9	April 6	April 15	May 3
Tulip Proserpine	Home grown	100	Excellent	" 24	87	61	71	221	1	7	12	Mar. 8	Mar. 22	April 25
Tulip Proserpine	Locally grown	100	Excellent	" 24	97	23	60	180	1	7¼	13	Mar. 22	Mar. 29	May 1
Tulip Proserpine	Imported	100	Excellent	" 24	101	91	86	278	1	6¾	12	Mar. 29	April 8	May 5
Tulip Vermilion Brilliant	Home grown	100	Very good	" 23	102	68	113	283	1	6¼	11	Mar. 8	Mar. 26	May 1
Tulip Vermilion Brilliant	Locally grown	100	Very good	" 23	84	79	80	243	1	5¾	11	Mar. 22	Mar. 29	May 3
Tulip Vermilion Brilliant	Imported	100	Very good	" 23	96	69	104	269	1	6	10	Mar. 29	April 8	May 3
Tulip Chrysolora	Home grown	100	Excellent	" 23	97	133	95	325	1	7	12	Mar. 8	Mar. 15	May 1
Tulip Chrysolora	Locally grown	100	Excellent	" 23	100	82	86	268	1	6½	11	Mar. 22	April 1	May 3
Tulip Chrysolora	Imported	100	Excellent	" 23	99	37	74	210	1	7	11	April 1	April 8	May 5
Tulip Artus	Home grown	100	Excellent	" 23	190	120	36	346	2	6¾	11	April 1	April 10	April 30
Tulip Artus	Locally grown	100	Excellent	" 23	166	121	73	360	3	6¾	11	April 8	April 19	May 3
Tulip Artus	Imported	100	Excellent	" 23	184	121	95	400	1	6¾	11	April 10	April 20	May 6
Tulip La Reine	Home grown	100	Very good	" 23	105	135	33	273	1	5¾	11	Mar. 22	Mar. 29	May 1
Tulip La Reine	Locally grown	100	Very good	" 23	128	126	43	296	1	5¼	10	April 1	April 10	May 1
Tulip La Reine	Imported	100	Very good	" 23	142	207	62	411	1	6	10	April 6	April 17	May 3
Tulip Duchesse de Parma	Home grown	100	Excellent	" 23	140	138	82	360	1	7¾	14	Mar. 29	April 6	April 30
Tulip Duchesse de Parma	Locally grown	100	Excellent	" 23	113	47	44	204	1	6¾	13	April 1	April 10	April 30
Tulip Duchesse de Parma	Imported	100	Excellent	" 23	147	136	74	357	1	6¾	13	April 6	April 15	May 3
Tulip Keizerskroon	Home grown	100	Excellent	" 23	147	92	57	296	1	8½	15	Mar. 15	Mar. 22	May 3
Tulip Keizerskroon	Locally grown	100	Excellent	" 23	104	57	52	213	3	7¼	15	Mar. 29	April 6	May 1
Tulip Keizerskroon	Imported	100	Excellent	" 23	144	85	59	288	2	7¼	14	April 6	April 15	April 30

LIST of Varieties of Bulbs—Home grown *versus* Imported and Locally grown.—*Con.*

Name of Variety.	Source.	Number planted.	Quality.	Increase.			Total.	Width of bloom.	Height.	Began to bloom.	Full bloom.	Bloom over.
				1st	2nd	3rd		inch.	inch.			
Daffodil Incomparabilis Cynosure	Home grown	25	Excellent	25	25	7	57	4	17	Mar. 29	April 6	April 26
Daffodil Incomparabilis Cynosure	Imported	25	Excellent	43	34	9	86	4	18	April 6	April 15	April 30
Daffodil Alba plena odorata	Home grown	25	Very good	28	9	8	45	3	15	April 1	April 10	April 30
Daffodil Alba plena odorata	Imported	25	Very good	25	7	3	35	2½	12	April 27	May 3	May 22
Daffodil Incomparabilis Figaro	Home grown	25	Very good	32	62	11	105	2¾	16	Mar. 22	Mar. 29	April 26
Daffodil Incomparabilis Figaro	Imported	25	Very good	28	10	5	43	4	14	April 6	April 17	May 1
Daffodil Incomparabilis plenus	Home grown	25	Very good	30	19	0	49	3	15	Mar. 22	Mar. 29	April 28
Daffodil Incomparabilis plenus	Imported	25	Very good	30	13	6	49	3	15	Mar. 29	April 6	May 5
Daffodil bicolor Victoria	Home grown	25	Very good	30	29	72	131	3¼	14	Mar. 29	April 6	April 23
Daffodil bicolor Victoria	Imported	25	Very good	25	5	16	46	3½	14	April 6	April 19	April 30
Daffodil bicolor Victoria	Locally grown	25	Very good	39	24	90	153	3¾	16	April 1	April 10	April 28
Daffodil Orange Phoenix	Home grown	25	Excellent	34	14	4	52	3½	13	Mar. 22	April 6	April 28
Daffodil Orange Phoenix	Imported	25	Excellent	33	10	0	43	3½	17	April 8	April 19	May 6
Daffodil Orange Phoenix	Locally grown	25	Excellent	41	5	0	46	3½	14	April 6	April 19	May 5
Daffodil Princeps	Home grown	25	Excellent	42	41	0	83	3¾	14	Mar. 15	Mar. 22	April 26
Daffodil Princeps	Imported	25	Excellent	58	8	7	73	4¼	15	Mar. 22	Mar. 29	April 30
Daffodil Princeps	Locally grown	25	Excellent	33	22	12	67	3¾	14	Mar. 22	Mar. 29	April 30
Daffodil Emperor	Home grown	25	Excellent	41	2	0	43	4	18	Mar. 22	Mar. 29	April 26
Daffodil Emperor	Imported	25	Excellent	51	0	0	51	3¼	20	April 6	April 15	April 30
Daffodil Emperor	Locally grown	25	Excellent	47	0	0	47	3¾	18	Mar. 29	April 6	April 30
Daffodil Barri Conspicuus	Home grown	25	Excellent	50	0	0	50	3½	15	Mar. 29	April 6	April 26
Daffodil Barri Conspicuus	Imported	25	Excellent	51	0	0	51	4	18	April 6	April 15	April 30
Daffodil Barri Conspicuus	Locally grown	25	Excellent	33	14	0	47	3½	17	April 1	April 10	April 28
Daffodil Golden Spur	Home grown	25	Excellent	48	9	0	57	4	17	Mar. 8	Mar. 15	April 10
Daffodil Golden Spur	Imported	25	Excellent	50	10	5	60	4¼	19	Mar. 29	April 6	April 30
Daffodil Golden Spur	Locally grown	25	Excellent	28	16	0	44	3½	15	Mar. 15	Mar. 22	April 19
Daffodil Empress	Home grown	25	Excellent	39	4	0	43	4¼	17	Mar. 29	April 6	April 27
Daffodil Empress	Imported	25	Excellent	52	0	0	52	4¼	16	April 6	April 15	May 1
Daffodil Empress	Locally grown	25	Excellent	44	6	0	50	4¼	16	April 6	April 10	April 30
Daffodil Sir Watkin	Home grown	25	Excellent	51	0	0	51	4¼	20	Mar. 22	Mar. 29	April 22
Daffodil Sir Watkin	Imported	25	Excellent	51	4	0	55	4¼	21	April 1	April 10	April 30
Daffodil Sir Watkin	Locally grown	25	Excellent	22	8	0	30	4	17	Mar. 29	April 6	April 26

The most striking feature of this experiment is the early and more durable bloom of the home grown bulbs.

The home grown Tulip bulbs proved superior in increase, more frequently than did the bulbs from other sources.

The Daffodil bulbs held their own in every instance and made a gain in a number of the tests.

EXPERIMENT TO FIND THE WEIGHT OF INCREASE OF BULBS BY MANIPULATING THE BLOOM AT CERTAIN PERIODS.

Fifty bulbs allowed to bloom and to seed. Fifty bulbs allowed to bloom, bloom cut at prime. Fifty bulbs allowed to bud and cut at commencement of bloom.

Name of Variety.	Date of planting.	Treatment.	Yield—Grade			Weight of bulbs		Began to bloom.
			1st	2nd	3rd	Lb.	Oz.	
Tulip Artus	Oct. 24	Mature	77	52	105	6	14	April 8 to May 3.
Tulip Artus	" 24	Prime	83	82	83	7	3	
Tulip Artus	" 24	Bud	88	28	82	6	6	
Tulip Duchesse de Parma	" 24	Mature	59	60	52	4	10	April 3 to April 30.
Tulip Duchesse de Parma	" 24	Prime	62	65	51	5	6	
Tulip Duchesse de Parma	" 24	Bud	54	68	71	5	7	
Tulip Chrysolora	" 24	Mature	50	0	17	3	..	April 1 to May 3.
Tulip Chrysolora	" 24	Prime	50	12	102	4	2	
Tulip Chyrsolora	" 24	Bud	50	23	112	2	10	

REMARKS.—The bulbs of Artus plucked in their prime were very good bulbs, in some cases one bulb throwing three flowering bulbs for next year.

SIDNEY.

EXPERIMENT WITH GRADES OF BULBS—TO FIND HOW SOON AND WHAT PERCENTAGE OF EACH GRADE WILL FLOWER.

Name.	No. planted.	Grade.	No. that Flowered.	Height.	Date of Bloom.	Remarks.
				In.		
Daffodil Golden Spur....	25	Third ..	1	10	....	Plant weak.
" " "	25	Second..	15	15	March 8 to April 19	Plant medium.
" Princeps......	25	Third ..	1	10	March 22 to April 1.	Plant weak.
" "	25	Second..	17	12	March 22 to April 19	Plant medium.
" Incomparabilis plenus......	25	Third ..	3	14	March 29 to April 8.	Plant weak.
" Incomparabilis plenus......	25	Second.:	15	14	April 6 to May 22...	Plant weak.
Tulip Chrysolora........	64	"	32	10	March 15 to April 30	Slight difference in size of leaf, no difference in size of flower from that of 1st class bulb.
" "	100	Third ..	0		....	Formed one leaf.
" Artus.............	200	Second..	157	10	March 22 to April 30	Leaf smaller than that of 1st class bulbs, flowers as large as those of 1st class bulbs.
" "	100	Third ..	6	9	....	Formed one stout leaf.
" Duchesse de Parma	200	Second..	176	11	April 1 to April 30..	Smaller leaf, but bloom as large as those of 1st class bulbs.
" " "	100	Third ..	14	10	April 1 to April 28..	Formed one stout leaf.

The second grade tulips in the above experiments weighed one and one-half pounds per hundred.

The third grade tulips in the above experiment weighed five and one-half ounces per hundred.

EXPERIMENTS WITH FLOWERING BULBS.

An experiment to find at what period of ripeness the epidermis of bulbs is in the best condition for storing. In this experiment fifteen rows of twenty bulbs each, of the Pottebakker White variety were set on October 27. These will be lifted during 1916, commencing first week in June, one row each week. The soil in which these bulbs were set, is a red sandy loam. Results of this experiment will appear in 1916 report.

An experiment to find which of the following methods of storage will give best results.

Placed in trays and kept in the dark.
Placed in trays and kept in medium light.
Placed in trays and kept in full light.
Stored in bulk in dry sand.
Stored in bulk in dry wood ashes.
Stored in bulk in dry buckwheat bran.
Heeled in in the soil to a depth of 6 inches.
Placed on shelves, medium light, good air circulation.
Placed in loft, perfectly dark, good air circulation.
Placed in loft, medium light, good air circulation.
Placed in loft, full light, good air circulation.
Results of this experiment will appear in 1916 report.

SIDNEY.

With gladioli seed sown in frames:—

Variety.	No. of rows.	Date of sowing.	Date of Germination.	Season's growth.
				Inches.
Joseph Hulot	1	June 22	July 26	3
Niagara	1	" 22	" 26	5
America	1	" 22	" 26	9
Willy Wigman	1	" 22	" 23	6
Glory of Holland	1	" 22	" 23	8
Lily Lehman	1	" 22	" 26	7

NOTE.—The second grade corms made good first grade corms after one season's growth.

Small corms made good second-grade corms with many more small corms.

Seed sown outside made very poor showing.

Seed sown in frame made good-sized bulblets.

An experiment to find how soon second grade gladioli corms, small corms, and seeds will flower, percentage of bloom, quality and development of corm.

With second grade corms:—

Six Joseph Hulot, two Niagara, two Princeps, two Glory of Holland, two Willy Wigman, having a combined weight of one pound were set, eight grew and attained an average height of 28 inches; started to bloom on September 1 and continued to September 26.

With Small Corms. Variety.	No. set.	Percentage developed to second grade stage.	Season's growth of leaves.
			Inches.
Pink Beauty	100	40	22
Joseph Hulot	100	33	15
America	100	7	8
Niagara	100	0	0
Willy Wigman	100	4	6
Halley	100	41	7

With gladioli seed, sown outdoors:—

Variety.	No. of rows.	Date of sowing.	Date of germination.
Joseph Hulot	1	May 1	Oct. 26
America	1	" 1	" 26
Niagara	1	" 1	Nov. 4
Willy Wigman	1	" 1	" 4
Glory of Holland	1	" 1	Oct. 26
Lily Lehman	1	" 1	" 26

SIDNEY.

The following varieties of flowering bulbs are being grown for distribution to other Farms and Stations:—

Tulip Artus.
" Joost Van Vondel, red.
" La Reine.
" Cottage Maid.
" Duchesse de Parma.
" Rose Grisdelin.
" Thomas Moore.
" Couleur de Cardinal.
" Joost Van Vondel, white.
" Pottebakker, red.
" Yellow Prince.
" Vermilion Brilliant.
" Proserpine.
" Pottebakker White.
" Keizerskroon.
" Mon Trésor.
" Chrysolora.
" L'immaculée.
" La Candeur.
" Imperator Rubrorum.
" Couronne d'Or.
" Yellow Rose.
" Murillo.
" Gloria Solus.
" Sunset.
" Viridiflora.

Tulip Picotée.
" Caledonia.
" Fairy Queen.
" Gesneriana spathulata.
" Inglescombe Yellow.
" La Merveille.
" Isabella.
" Darwin mixed.
Daffodil Princeps.
" Golden Spur.
" Single van Sion.
" bicolor Victoria.
" " Empress.
" Frank Miles.
" Barri conspicuus.
" incomparabilis Cynosure.
" " Figaro.
" " Sir Watkin.
" " Plenus.
" Orange Phœnix.
" double van Sion.
" Albo pleno odorata.
" poeticus ornatus.
Parrot Tulip Lutea major.
" " Perfecta.

Tulips, auxillary bulblets of Murillo, Pottebakker Red, Baronne de la Tonnaye.

TEST OF VARIETIES OF JAPANESE LILIES.

The following varieties of lilies secured from Japan were set on December 3. A report as to their adaptability and usefulness will be made in the report for 1916.

Lilium Leichtlini.
" *Browni var odorum.*
" *rubellum.*
" *Krameri.*
" *Hansoni.*
" *cordifolium.*
" *coridion var Okihime*
" *tigrinum Fortunei giganteum.*

Lilium Henryi.
" *speciosum Melpomene.*
" " *album.*
" " *rubrum.*
" " *magnificum.*
" *auratum.*

SIDNEY.

ANNUALS.

ANNUAL FLOWERING PLANTS—STARTED IN HOTBED.

Seeds of all the following flowering plants were sown in hotbed on April 12, and the resulting young plants were set in rows on May 28 and June 9. The work was carried on entirely under field conditions—no water was applied after the plants were set.

Name or description.	Commenced to bloom.	Height.	Merit.
		Inches.	
Aster Pink Enchantress	Aug. 10	18	Special.
“ Giant Daybreak	“ 10	18	Ordinary.
“ Pink King	“ 18	18	Special.
“ Rose King	“ 18	22	Ordinary.
“ White King	“ 18	15	Special.
“ Crimson King	“ 10	15	Ordinary.
“ Early Branching Lavender	“ 10	15	Special.
“ Early Branching Rose	“ 4	18	Ordinary.
“ Early Branching White	“ 10	18	Ordinary.
“ Semple Branching Pink	“ 17	23	Special.
“ Victoria Light Yellow	“ 18	12	“
“ Imperial Yellow	“ 18	12	“
“ Late Branching Dark Violet	“ 10	20	Ordinary.
“ Late Branching Snow White	“ 19	16	“
“ Late Upright	“ 10	15	“
“ Truffauts Paeony	“ 2	18	“
“ Imperial Violet	“ 19	18	“
“ Primrose Queen	“ 14	16	Special.
“ Exhibition Wonder	“ 9	10	“
“ Large Purple Ray	“ 2	....	“
“ Old Rose	“ 4	15	Ordinary.
“ Giant Ray	“ 4	9	“
“ Snowball	“ 2	6	Special.
“ Ostrich Plume	“ 4	14	Ordinary.
“ Giant French	“ 10	14	“
“ Giant Pink Ray	“ 4	15	Special.
“ Blushing Beauty	“ 28	18	“
“ Fire King	“ 17	6	“
“ Giant Comet	“ 4	18	“
Antirrhinum Tom Thumb Rose	“ 9	....	Ordinary.
“ Tom Thumb Orange	“ 26	....	“
“ Tom Thumb Crimson	“ 26	....	“
“ Tom Thumb Yellow	“ 9	....	“
“ Tall Superb	“ 9	....	“
“ Tom Thumb White	“ 18	....	“
“ Intermediate Delicate Pink	“ 18	....	“
“ Intermediate Bright Crimson	“ 18	....	“
“ Intermediate Delicate Shades	“ 9	....	“
“ Intermediate Yellow	“ 9	....	“
Amaranthus tricolor	July 26	20	“
Alonsoa Warscewiczii compacta	Aug. 4	21	Special.
Arctotis grandis	July 13	21	“
Balsam Camellia flowered	“ 13	15	“
Browallia elata blue	“ 28	18	“
Cosmea, Early Flowering	“ 6	36	Ordinary.
Celosia pyramidalis	June 28	6	Special.
Cockscomb, Dwarf Crimson	“ 28	6	“
Coreopsis cardaminifolia	July 13	12	“
“ Mixed colours	June 26	15	“
“ *tinctoria*	“ 21	24	“
“ *atrosanguinea*	July 6	32	“
Dianthus superbissimus	“ 6	9	“
“ *Heddewigii*	“ 20	8	“
Dimorphotheca aurantiaca	“ 6	10	“
Ipomaea rubro coerulea	“ 26	36	“
Kochia trichophylla	Aug. 26	36	“
Marigold, French Tall	June 14	32	“
“ “ Single	“ 28	24	“

ANNUAL FLOWERING PLANTS—STARTED IN HOT BEDS.—*Continued.*

Name or description.	Commenced to bloom.	Height.	Merit.
Nemesia Large Apricot	June 24	12	Special.
“ “ Mixed	“ 21	17	Ordinary.
“ “ Scarlet	“ 21	15	Special.
“ “ Orange	“ 21	10	“
“ “ Rose Pink	“ 21	15	Ordinary.
“ “ White	“ 24	13	“
“ Choice Mottled	“ 14	12	“
Nicotiana affinis, hybrids	July 6	48	Special.
Portulaca, Improved double	“ 13	6	“
Phlox Drummondii Intermediate mixed	“ 6	12	“
“ Large-flowered Carmine	“ 6	8	Ordinary.
“ “ Salmon	June 28	12	“
“ “ Scarlet	July 13	12	“
“ “ Deep Crimson	June 26	12	Special.
“ “ White	“ 26	12	“
“ “ Blue	“ 26	12	Ordinary.
Petunia, Single Superb	“ 15	15	“
Ricinus communis major	July 20	54	“
Scabious, Large Mixed	“ 26	24	Special.
Salpiglossis, Mixed	“ 26	24	“
“ Large Mixed	“ 13	36	“
“ Choice selected	“ 6	36	“
Salvia, Summer Fireball	“ 20	15	“
“ Scarlet Queen	Sept. 7	24	Ordinary.
Schizanthus, Veitch Hybrids	July 20	14	Special.
“ Selected	“ 6	18	“
Stock, Ten Week Blue	June 30	17	“
“ “ Rose	July 6	13	“
“ “ Purple	“ 20	15	“
“ “ Yellow	“ 6	14	“
“ “ White	“ 4	13	“
Tagetes signata pumila	June 21	9	“
Verbena, Giant Auricula	July 6	12	Ordinary.
“ Imp. Pulcherrima	June 24	9	Special.
“ Superb Bedding	July 4	9	Ordinary.
Zinnia, Double Fireball	June 21	8	“
“ Elegans Coccinea	“ 14	22	“
“ Giant Double	“ 26	16	“
“ Elegans Rosea	“ 24	22	“
“ “ Atropurpurea	“ 9	12	“
“ “ Alba	“ 14	18	“

Of the ninety-three different annual flowering plants under test, fifty-three gave excellent results in bloom and foliage.

Annual Flowering Plants: Seeds sown in position where plants grew on April 29 under field conditions. Plants did not receive any water. All plants bloomed until late in October.

Name or description.	Date of Blooming.	Height.	Merit.
		Inches.	
Acroclinium, Double Rose	June 28	22	Special Merit.
Alyssum, Little Dorrit	“ 18	4	Special Merit.
Bartonia aurea	“ 26	24	Special Merit.
Calendula officinalis, Lemon	July 2	12	Special Merit.
Calendula officinalis, Orange	“ 6	12	Special Merit.
Candytuft, Improved Carmine	“ 8	12	Special Merit.
Centranthus Macrosiphon	“ 13	18	Ordinary.
Clarkia elegans, Brilliant	“ 6	26	Special Merit.
Centaurea Cyanus	June 28	32	Special Merit.
Centaurea Cyanus, Blue	“ 6	24	Special Merit.
Chrysanthemum, Morning Star	July 6	15	Ordinary.
Chrysanthemum, Northern Star	“ 6	12	Ordinary.
Eschscholtzia, Mixed	June 26	18	Very free flowering.
Gypsophila elegans	“ 21	18	Useful.
Godetia, Mixed	July 17	12	Ordinary.
Godetia, Bridesmaid	“ 20	15	Special Merit.
Godetia, Double Crimson	“ 20	24	Ordinary.
Jacobaea, Mixed Colours	“ 10	12	Ordinary.
Lavatera rosea splendens	“ 20	24	Special Merit.
Lupinus, Mixed	“ 6	27	Special Merit.
Larkspur, Rosy Scarlet	“ 10	42	Special Merit.
Larkspur, White	“ 17	42	Special Merit.
Larkspur, Blue	“ 26	42	Special Merit.
Leptosiphon hybridus	June 6	18	Ordinary.
Linum grandiflorum	“ 28	9	Special Merit.
Mignonette, Sweet Buff	July 10	12	Ordinary.
Malope, Mixed	“ 26	12	Special Merit.
Nasturtium, Tom Thumb	“ 2	10	Ordinary.
Nasturtium, Tom Thumb Veitch	“ 6	10	Ordinary.
Nasturtium, Tom Thumb Brilliant	“ 2	10	Ordinary.
Nasturtium, Tall Scarlet	“ 2	36	Ordinary.
Nasturtium, Tall Crimson	“ 4	36	Ordinary.
Nasturtium, Tall Yellow & Crimson	June 28	36	Ordinary.
Nasturtium, Tall Pearl	“ 28	36	Ordinary.
Nasturtium, Tall Fairy Queen	“ 28	36	Ordinary.
Nasturtium, Tall Salmon	July 6	36	Ordinary.
Poppy, Double Carnation	“ 13	33	Special Merit.
Poppy, Shirley	“ 6	20	Special Merit.
Sweet Sultan, Giant Mixed	“ 8	24	Special Merit.
Sweet Sultan, mixed	“ 13	28	Special Merit.
Viscaria cardinalis	“ 20	12	Ordinary.

SWEET PEAS.

Name.	Date of Sowing.	Date of Blooming	Colour.	Length of stem.	Number of blooms per stem.	Merit.
King White	April 12	July 16	White	Long	3	Very good.
Illuminator	“ 12	“ 13	Rosy salmon	Long	3	Good.
Lilian	“ 12	“ 13	Flesh pink	Long	3	Very good.
Decorator	“ 12	“ 6	Rose pink	Medium	3	Sunscalds.
Wedgewood	“ 12	“ 13	Blue	Long	3	Very good.
Thomas Stevenson	“ 12	“ 13	Light pink	Long	3	Sunscalds.
Queen of Norway	“ 12	“ 13	Mauve	Long	4	Sunscalds.
Hercules	“ 12	“ 13	Pink	Long	3 to 4	Very good.
Elfrida Pearson	“ 12	“ 13	Flesh pink	Long	4	Very good.
Edrom Beauty	“ 12	“ 13	Orange salmon	Long	3 to 4	Good.
Maud Holmes	“ 12	“ 8	Scarlet	Long	3	Very good.
Empress Eugenie	“ 12	“ 13	Lavender	Medium	3	Good.
White Queen	“ 12	“ 13	White	Long	3	Very good.
Nubian	“ 12	“ 13	Purple	Long	3 to 4	Good.
Scarlet Emperor	“ 12	“ 13	Scarlet	Long	3	Very good.
Rosabelle	“ 12	“ 6	Deep pink	Long	3 to 4	Good.
John Ingman	“ 12	“ 13	Red	Long	3 to 4	Good.
Flora Norton Spencer	“ 12	“ 13	Pale Blue	Long	3	Very good.
Mrs. Routzahn	“ 12	“ 13	Apricot	Long	3 to 4	Good.
Agricola	“ 12	“ 20	Rose lilac	Long	3 to 4	Very good.
Zarina	“ 12	“ 13	Deep pink	Medium	3	Good.
Miss Willmott	“ 12	“ 13	Salmon pink	Medium	3	Sunscalds.
Lady Grisel Hamilton	“ 12	“ 13	Pale mauve	Medium	2 to 3	Good.
Helen Pierce	“ 12	“ 13	Blue	Medium	3	Very good.
Black Knight	“ 12	“ 18	Dark maroon	Medium	2 to 3	Good.
Dorothy Eckford	“ 12	“ 26	White	Medium	3	Good.
Jeannie Gordon	“ 12	“ 20	Cream rose	Long	3	Very good.
Mrs. Collier	“ 12	“ 26	Cream	Long	3	Very good.
Mrs. W. Wright	“ 12	“ 26	Purple	Medium	3	Very good.
Prima Donna	“ 12	“ 26	Flesh pink	Long	3	Good.
Queen Alexandra	“ 12	“ 13	Scarlet	Long	3	Very good.
Rose du Barri	“ 12	“ 13	Rose	Medium	3	Sunscalds.
Nora Unwin	“ 12	“ 19	White	Medium	3	Good.
Mrs. W. J. Unwin	“ 12	“ 13	White & scarlet	Long	3	Very good.
Mrs. A. Ireland	“ 12	“ 20	Pink & cream	Medium	2–3	Very good.
Asta Ohn	“ 12	“ 20	Pink	Long	3	Very good.
Charles Foster	“ 12	“ 17	Mauve & pink	Long	4	Very good.
Countess Spencer	“ 12	“ 13	Pink	Long	3	Very good.
Helen Grosvenor	“ 12	“ 13	Orange pink	Long	3	Sunscalds.
Lady Evelyn Eyre	“ 12	“ 13	Pale pink	Long	4	Very good.
Florence Nightingale	“ 12	“ 20	Lavender	Medium	3	Good.
Etta Dyke	“ 12	“ 13	White	Long	4	Very good.
Elsie Herbert	“ 12	“ 13	White & pink	Long	3–4	Good.
Clara Curtis	“ 12	“ 20	Cream	Long	3	Very good.
Mrs. Cuthbertson	“ 12	“ 31	Deep rose	Long	3	Very fair.
Mrs. C. W. Breadmore	“ 12	“ 20	Cream & rose	Long	3	Good.
Tennant Spencer	“ 12	“ 18	Purple	Medium	3	Sunscalds.
Cerise Spencer	“ 12	“ 16	Deep pink	Long	3	Very good.
Helen C. Stapleton	“ 12	“ 20	Pink	Long	3–4	Very good.
Edith Taylor	“ 12	“ 15	Pink to rose	Long	3	Good.
Princess Mary	“ 12	“ 15	Light blue	Long	3	Very good.
Robert Sydenham	“ 12	“ 8	Salmon	Long	3–4	Sunscalds.
America Spencer	“ 12	“ 15	White & scarlet	Long	3	Very good.
Irish Belle	“ 12	“ 13	Mauve	Long	3–4	Very good.
Hugh Dickson	“ 12	“ 13	Pink	Long	3–4	Very good.
Dainty Spencer	“ 12	“ 17	Cream	Long	3	Good.
Queen Victoria	“ 12	“ 13	White	Long	3	Good

SIDNEY.

SWEET PEAS.—*Continued.*

Name.	Date of Sowing.	Date of Blooming.	Colour.	Number of blooms per truss.	Merit.
Stirling Stent	April 12	July 13	Salmon pink	3	Sunscalds.
Vermilion Brilliant	" 12	" 6	Vermilion	3	Sunscalds.
Orchid	" 12	" 13	Purple	3	Good.
Captivation Spencer	" 12	" 26	Purple	3	Good.
Helen Lewis	" 12	" 18	Salmon	3	Sunscalds.
King Edward	" 12	" 20	Red	3	Good.
Ethel Roosevelt	" 12	" 17	White & purple	3–4	Very good.
Lady Evelyn Eyre	" 12	" 13	Pale pink	3	Good.

Of the sixty-five varieties of sweet peas, ten sunscalded to such a degree as to make them useless in an exposed bright position. They would be useful in north exposures. Twenty-nine of the varieties gave bloom that we could class as very good while twenty-three varieties graded good. The peas were grown on brush supports, in open field and without water. All varieties seeded freely and produced seeds of high quality.

ARBORETUM.

The arboretum established in 1913 has made very satisfactory growth during the past season. The system of tillage has been one of horse cultivation and hand hoeing. The Kimball cultivator was used successfully throughout the season.

The following trees and shrubs were secured from various sources and added to the arboretum during the spring of 1915. The great majority of these plants established themselves and made satisfactory growth. A number of the following shrubs bloomed twice during the season:—

Andromeda paniculata.
" *axillaris.*
Ardisia crispa.
" *japonica.*
Aucuba japonica viridis.
" *japonica.*
Aesculus Hippocastanum.
Acer macrophyllum.
" *saccharinum (dasycarpum).*
" *reticulatum.*
" *trifidum.*
Amelanchier cretica.
Abies Apollinis.
" *brachyphylla.*
" *concolor.*
" *grandis.*
" *nobilis glauca.*
" *Nordmanniana.*
Baccharis patagonica.
Betula occidentalis.
Buddleia variabilis.
" *intermedia.*
" *Lindleyana.*
" *variabilis magnifica.*
" " *Veitchiana.*
" " *superba.*
" *Davidii.*
Cercis Siliquastrum rubrum.
Carpinus orientalis.
Chloranthus brachystachys.
Cephalotaxus Fortunei.
" *drupacea.*
" *pedunculata.*
Cupressus Lawsoniana argentea.
" " *Allumi.*
" " *albo spica.*
" " *aurea nova.*
" " *elegantissima.*
" " *filiformis elegans.*
" " *gracilis.*
" " *globosa filiformis.*
" " *Hollandii.*
" " *Fraseri.*
" " *lutescens.*
" " *lycopodioides.*
" " *minima glauca.*
" " *monumentalis.*
" " *plumosus nidifera nana.*
" " *pyramidalis alba.*
" " *Rosenthali.*
" " *schongariensis.*
" " *stricta coerulea.*
" " " *viridis.*
Cedrus atlantica.
" *Libani.*
" *Deodara.*
Caryopteris mastachanthus.
Catalpa syringaefolia.
" *speciosa.*
Cleyera japonica.
Cercidiphyllum japonicum.
Corylopsis spicata.
Camellia Sasanqua Fukuzutsumi.
" " *Onigoromo.*
" " *Azuma-nishiki.*

SIDNEY.

ARBORETUM.—*Continued.*

Coronilla emeroides.
Ceanothus Arnoldi.
" *Indigo.*
Cytisus nigricans Carlieri.
" *praecox alba.*
" *scoparius andreanus.*
" *trifolius.*
" *hirsutus.*
Dapniphyllum glaucescens.
Deutzia gracilis eximia.
" " *venusta.*
" *Lemoinei Avalanche.*
" *corymbiflora.*
" *Watereri.*
" *crenata flore roseo pleno.*
" " *candidissima pleno.*
" *Fortunei.*
" *discolor floribunda.*
" " *lactea.*
" " *arcuta.*
" " *densiflora.*
" " *grandiflora.*
" *scabra Thunbergii.*
" " *crenata.*
" *kalmiaeflora.*
" Pride of Rochester.
Dendropanax japonicus.
Daphne Mezereum rubrum.
" *Laureola.*
" *odora.*
Desmodium Dilleni.
Escallonia Philippeana.
Eriobotrya japonica.
" " *Tanakae.*
Euonymus japonicus compactus.
" " Duc d'Anjou.
" " President Gauthier.
" " *pyramidalis.*
Enkianthus japonicus.
Forsythia viridissima.
Fatsia japonica.
Fagus sylvatica.
Ginkgo biloba.
Genista germanica.
" *tinctoria.*
Helwingia rusciflora.
Hypericum patulum.
" " *Henryi.*
Hamamelis japonica.
Hibiscus syriacus pompon rouge.
" " *paeoniaeflorus.*
" " *purpureus foliis variegatis.*
" " *roseus plenus.*
" " *ranunculiflorus plenus.*
" " *puniceus plenus.*
" " *bicolor hybridus.*
" *syriacus rubis.*
" " de la Reine.
" " *carneus plenus.*
" " *Ardens.*
" " *anemonaeflorus.*
Itea virginica.
Indigofera dosua.
Ilex crenata.
" *corallina.*
Jasminum revolutum.
" *nudiflorum.*
" *primulinum.*
Juglans regia.
Kerria japonica.
Kalmia latifolia.
" *angustifolia.*
Liriodendron tulipifera.
Laburnum vulgare.
" " *Adami.*

Larix leptolepis.
Lycium europaeum.
Lindera sericea.
" *triloba.*
Leycesteria formosa.
Lonicera tatarica.
Lespedeza Sieboldii.
" *cyrotobotrya.*
" *bicolor.*
Ligustrum Quihoui.
Magnolia conspicua.
" *hypoleuca.*
" *longifolia.*
" *stellata.*
" *stellata rosea.*
" *parviflora.*
" *salicifolia.*
Michelia fuscata.
Nuttallia cerasiformis.
✓ *Picea pungens.*
" " *Kosteriana glauca.*
Pieris ovalifolia lanceolata.
Prunus (Laurus) Laurocerasus compacta
" " " *angustifolia.*
" " " *myrtifolia.*
" " " *schipkaensis Zabeliana.*
" " " *schipkaensis mischeana.*
" " " *lusitanica.*
" " *nobilis.*
Prunus Pseudo-cerasus Mt. Fuji.
" " " *Sekizan.*
" " " *Asahi-botan*
" *persica.*
" " double white.
Prunus emarginata.
Platanus orientalis.
Pyrus japonica alba.
" " *Moerloosi.*
" " *Columbia.*
" *Cydonia.*
" *coronaria.*
" *cerasifera coccinea.*
" *Michauxii.*
" *Pollveria.*
" *japonica.*
" " *Sargentii.*
" " *Gaujardii.*
/ " " *Aurora.*
Podocarpus Nageia.
" " *variegata.*
" " *macrophylla.*
Potentilla Veitchii.
Philadelphus coronarius.
" *primulaeflorus.*
" *Satsumi.*
" *rosaeflorus plenus.*
" *satzmannii.*
" *multiflorus plenus.*
" *purpureus maculata.*
" *fimbriatus.*
" *dianthaeflorus plenus.*
" *nepalensis.*
" " *variegata.*
" *Magdalenae.*
" *Falconeri.*
" Souvenir de Billard.
" *Zeyheri.*
" *nivalis.*
" *grandiflorus.*
" *Gordonianus.*
" *Lemoinei Bouquet blanc.*
Pinus koraiensis.
" *Torreyana.*
" *sabiniana.*

ARBORETUM.—*Continued.*

Pinus, Coulteri.
" *ponderosa.*
" *Jeffreyi.*
" *Ayacahuite.*
" *Parryana.*
" *densiflora Tanyosho.*
" *radiata.*
" *Massoniana.*
Photinia glabra rubens.
Ptelea trifoliata.
Quercus pubescens.
Rosa rubrifolia.
Rhus semialata.
Rubus rosifolius coronarius.
" *nutkanus.*
" *strigosus.*
" *spectabilis.*
" *trifidus.*
" *incisus.*
" *sorbifolius.*
Ribes divaricatum.
" *sanguineum.*
" *Lobbii.*
Rhododendron Oreodoxa.
" *Sutchuenense.*
" *Hunnewellianum.*
" *Davidsonianum.*
" *lutescens.*
" *Augustinii.*
" *Xanthinum.*
" *ambiguum.*
" *Polylepsis.*
" *indicum variegata ignescens.*
" *longistylum.*
" *pachytrictum.*
" *Websterianum.*
" *Searsiae.*
" *Polyepia.*
" *strigillosum.*
" Alexandre Adie.
" Blandyanum.
" Leonidas.
" William Gladstone.
" Commander.
" *Everestianum.*
" Minnie.
Rhododendron Prince Camille de Rohan.
" *Sherwoodianum.*
" *Jacksoni Speciosum.*
" Princess Mary.
" Lady Armstrong.
" Madam Masson.
" *Onslovianum.*
" Madam Cachet.
" Michael Waterer.
" *Roseum Magnum.*
" Boule de Neige.
" Madam Rosenthal.
" Madam Wagner.
Pyrus Aucuparia.
Staphylea colchica.
Sambucus callicarpa.
Spartium junceum.
Spiraea discolor ariaefolia.
" *Van Houttei.*
Stuartia Pseudo-camellia.
Styrax Veitchiorum.
" *Obassia.*
" *japonica.*
Syringa vulgaris de Saussure.
" *villosa.*
Sequoia sempervirens.
" *gigantea.*
Stephanandra flexuosa.
" *Tanakae.*
Symphoricarpus racemosa.
Skimmia japonica.
Ternstroemia japonica.
Thuya plicata.
Tamarix indica.
Trochodendron araloides.
Torreya nucifera.
Taxus cuspidata.
" *tardiva.*
Taxodium sempervirens.
" *distichum.*
Viburnum plicatum.
" *plicata tomentosum.*
" *hupehense.*
Vitex Agnus-castus.
Zanthoxylum piperitum.
" *stenophyllum.*

LANDSCAPE DEVELOPMENT.

The scheme of park drives has been much changed. The débris has been removed from the forest portion of the park and a number of plantations made. Curbings of cement to protect the flower border on the bridge were constructed. The roadways have in part been curbed with one by six fir lumber. Two large flower beds, for bulb and flowering annuals, were made. A beginning was made in rustic picnic equipment for the park.

Planting on East Border:
Acer trifidum.
Albizzia Julibrissin.
Alnus firma.
Alnus maritima.
Andromeda japonica.
Bignonia capreolata.
Buxus japonica.
Cedrela sinensis.
Celastrus articulatus.
Japanese Cherry Ariake.
Cherry Yoshino.
Cinnamomum Camphora.
" *Laureiri.*
Cleyera japonica.
Cornus macrophylla.
Daphniphyllum glaucescens.
Diospyros Kaki.
Elaeagnus pungens.
" *longipes.*
Euonymus alatus.
" *radicans.*
" *radicans variegata.*
Euscaphis staphyleoides.
Hamamelis japonica.
Hydrangea (collection).
Ilex integra.
" *crenata.*
" *latifolia.*
Illicium religiosum.

Sidney.

LANDSCAPE DEVELOPMENT.—*Continued.*

Park Border:
Actinidia Kolomikta.
Buddleia (collection).
Photinia glabra.
" " *rubens.*
Eurya japonica.
Corylopsis spicata.
Enkianthus japonicus.
Cercis chinensis.
Stephanandra flexuosa.
" *Tanakae.*
Rubus incisus.
" *trifidus.*
Nandina domestica.
Pittosporum Tobira.
Fatsia japonica.
Dendropanax.
Japanese Maple (collection).
Spiraea ariaefolia.
" *sanguineum.*
Ribes sanguineum.
Cornus Nuttallii.
Philadelphus.
Barberis Aquifolium.

Banks of Pond—North of Bridge:
Delphinum (collection).
Cornus florida.
Kalmia latifolia.
Digitalis (collection).
Hydrangea (group).
Iris germanica.
Magnolia (collection).
Iris Kaempferi.
Sambucus nigra (variety).
Hypericum patulum.
" *chinense.*
Digitalis (collection).
Bambusa (in variety).
Phyllostachys (in variety).
Arundinaria.

Banks of Pond—South of Bridge:
Hydrangea hortensis (collection).
Bignonia (collection).
Wistaria.
Celastrus.
Schizophragma.
Clematis.
Berchemia.
Citrebia.
Kerria japonica flore pleno.
Caryopteris mastacanthus.
Rhododendron (collection).
Ilex Sieboldii.
Illicium religiosum.
Ligustrum ciliatum.
" *Ibota.*
" *medium.*
Magnolia compressa.
" *compacta.*
" *fuscata.*
Myrica rubra.
Olea fragrans.
" *Aquifolium*
Paulownia imperialis.
Prunus Pseudo-cerasus Niyaki.
" " " *Ojochin.*
" " " *Hosokawabeni.*
" " " *Ukon.*
" " " *Mikuruma-gayeshi*
" " " *Ama-no-gawa.*
" " " *Sekizan.*
" " " *Mount Fuji.*
" " " *Asahi-botan.*
" " " *Ko-fugen.*
Pyrus sinensis.
Rubus sorbifolius.
Sterculia.
Tecoma grandiflora.

PROPAGATION FROM CUTTINGS.

Cuttings from one hundred and four varieties of trees, shrubs, roses, and climbing plants were taken and propagated with success. All cuttings were taken during July and started in frames. An idea may be gleaned from the results relative to the ease or difficulty of propagation of the various species.

Name of Plant.	No. propagated.	No. alive.
Ampelopsis Veitchii	13	12
Buddleia Davidii	25	24
" *magnifica*	25	23
" *Lindleyana*	25	23
" *Veitchiana*	25	21
" *variabilis superba*	25	18
Caryopteris Mastachanthus	25	22
Cytisus purpureus albus	25	16
Ceanothus americana	25	21
" *Arnoldii*	25	23
" *Indigo*	25	7
" *Albert Pittet*	25	20
" *Gloire de Versailles*	25	25
" *Gloire de Plantiéres*	25	24
" *Marie Simon*	25	14
Cytisus schipkaensis	25	14
Crypomeria aya sugi	12	8
Daphne odora pink	25	23
" *Genkwa*	25	6
" *odora alba*	25	23
Exochorda Albertii	25	9
Euonymus Japonica variegatus	25	24
" *compactus argenteus*	25	25
" *masculata aurea*	25	21
Escallonia rubra	25	22
" *montevidensis*	25	19
" *rosea*	25	20
" *philippiana*	25	20
Fuchsia gracilis	50	39
" *Riccartoni*	25	18
Ficus Carica	6	6
Genista Anxantica	25	8
" *scoparia Andreana*	25	5
Hydrangea cinerea sterilis	25	6
" *Ornement*	15	3
Hedera dentata variegata	25	17
" *maculata major*	25	19
Hydrangea Bretschneideri	12	0
" *Rosthorni*	13	3
Idesia polycarpa	12	1
Prunus (Laurus) Laurocerasus compacta	10	9
" " *Nobilis*	7	7
" " *Laurocerasus angustifolia*	12	6
" " *lusitanica myrtifolia*	12	8
" " *Laurocerasus rotundifolia*	12	11
" " *Laurocerasus Bruanti*	12	3
" " *Laurocerasus camelliaefolia*	12	9
" " *Laurocerasus colchica*	12	4
" " *Laurocerasus Bernardi*	12	12
" " *Laurocerasus Triomphe de Bordeaux*	12	8
" " *Laurocerasus pyramidalis*	12	8
Prunus (Laurus) Laurocerasus caucasica	12	8
" " *Laurocerasus schipkaensis Mischeana*	12	12
" " *Laurocerasus latifolia* folia *Bertini*	12	7
" " *Laurocerasus Otini*	12	12
Prunus Laurocerasus schipkaensis Zabeliana	12	11
Prunus Laurocerasus schipkaensis	12	4
" " *serbica*	12	8
Lonicera nitida	185	181
" *hispidula*	13	1
" *Albertii*	25	25
Lavendula Vera	25	25
Rosa wichuraiana	25	20
Rose, Mrs. John Laing	6	1
" Souvenir de Pierre Notting	6	3
" Mrs. R. G. S. Crawford	6	0
" General Jacqueminot	6	5
" Caroline Testout	6	4
" Frau Karl Druschki	6	0
" Viscountess Folkstone.	6	1
" Kaiserin Augusta Victoria	6	1
" Alfred Colomb	6	2
" Ulrich Brunner	6	5
" Climbing La France	12	8
" Chromatella	12	12
" Devoniensis	12	8
" Fortunes double yellow	12	10
" James Sprunt	12	12
" William Allen Richardson	12	10
" Alister Stella Gray	12	12
" Fanny Stolwerck	12	12
" Zella Pradel	12	12
" Perle des Neiges	12	5
" Alberic Barbier	12	1
" Russells Cottage	12	9
" Birdie Blye	12	5
" Christine Wright	12	0
" Empress of China	12	11
" Gainsborough	12	2
Sambucus nigra foliis aureis	25	23
Tamarix hispida aestivalis	13	12
" germanica vera	25	15
" gallica	25	12
" caspica	25	0
" odessana	25	16
" parviflora	25	19
" japonica plumosa	25	11
" africana	25	20
" tetandra purpurea	25	4
" juniperina	25	9
" indica	25	7
Vaccinium caespitosum	25	7
Viburnum Tinus (Laurestinus)	25	24

SIDNEY.

Seeds of the following plants were secured and sown in frames on June 26, all germinated and those that are marked X have been transplanted into nursery row. The unstarred plants are wintering in the frames. Some sixty-seven other varieties of plant seeds planted at the same time failed to germinate.

x *Acacia Armata.*
" *podalyriaefolia.*
x " *saligna.*
x " *cultriformis.*
x " *pycnantha.*
" *cyanophylla.*
" *mollissima.*
" *Cyclops.*
" *lenifolia.*
x " *melanoxylon.*
x " *latifolia.*
" *elata.*
x " *lophantha.*
x " *floribunda.*
" *Baileyana.*
x " *dealbata.*
" *verticillata.*
x *Angophora lanceolata.*
Ampelopsis quinquefolia.
x *Buddleia variabilis.*
" *superba.*
" *variabilis Veitchiana.*
x " " *magnifica.*
x *Cytisus nigricans Carlieri.*
x " *nigricans.*
x " *hirsutus.*
x *Casuarina californica.*
x " *stricta.*
x " *quadrivalis.*
x " *equisetifolia.*
x *Ceratonia Siliqua.*
x *Cassia tomentosa.*
x " *artemisioides.*
Chamaerops humilis.
Cocos Alphonsii.
Callitris robusta.
Desmodium Dilleni.
x *Erythrina crista galli.*
x *Eucalyptus leucoxylon.*
x " *calophylla.*
x " *capitellata.*
x *Eucalyptus tereticornis.*
x " *creba.*
x " *amygdalina.*
x " *botryoides.*
x " *bosistoana.*
x " *amplifolia.*
x " *globulus.*
x " *citriodora.*
x " *diversicolor.*
x " *Stuartiana.*
x *Guara* Strawberry.
x *Grevillea robusta.*
x *Genista scoparia.*
" *scoparia Andreana.*
x " *tinctoria.*
Juglans regia.
x *Laburnum vulgare.*
x *Umbellularia californica.*
Ulex europaeus.
x *Wigandia macrophylla.*
x *Weigelia Van Houttei.*
x " *Cameleon.*
" *arborea grandiflora.*
x " *Verschaffelti.*
Skimmia japonica.
Ternstroemia japonica.
Thuya plicata.
Tamarix indica.
Trochodendron aralioides.
Torreya nucifera.
Taxus cuspidata.
" *tardiva.*
Taxodium sempervirens.
" *distichum.*
Viburnum plicatum.
" *plicatum tomentosum.*
" *hupehense.*
Vitex Agnus-castus.
Zanthoxylum piperitum.
" *stenophyllum.*

SIDNEY.

CLIMBING ROSES.

TEST of Varieties, hardiness and mildew resistance. Planted, 1914.

Name.	Description.	Wintered.	Season's growth.	Condition.	Mildew.	Began to bloom.	Full bloom.	Bloom over.
			Inches.					
Climbing Meteor	Dark velvety crimson	Well	54	Medium	Large amount	July 13	July 22	Oct. 18
Wonderful Blue	Violet blue	Well	84	Good	Free	June 1	June 9	July 6
Climbing Killarney	Deep bright pink	Well	66	Good	Large amount	May 14	June 1	July 28
Climbing Mad. Jules Grolez	Satin rose, large hips	Medium	28	Good	Small amount	June 2	June 9	Sept 30
Climbing Wootton	Bright red to crimson	Well	72	Good	Free	April 28	May 17	Sept. 30
Climbing La France	Large silvery pink	Well	90	Good	Small amount	May 5	May 25	Nov. 30
Climbing Lady Godiva	Pink and white	Well	108	Good	Free	June 24	July 6	Dec. 31
Climbing Clotilde Soupert	Creamy white to pink	Medium	96	Good	Medium amount	May 17	June 1	Jan. 31
Climbing Baby Rambler	Clear red	Well	84	Good	Large amount	Sept. 10	Sept. 17	Sept. 30
Climbing Helen Gould	Dark pink to crimson	Weak	12	Medium	Free			
Climbing Papa Gontier	Deep red to crimson	Medium	54	Good	Medium amount	May 10	May 25	Oct. 16
Climbing Lily Ito	White suffused pink	Well	120	Good	Free	June 2	June 9	July 2
America	Pink to yellow	Well	60	Good	Large amount	May 1	May 25	June 18
Beauty of Glazenwood	Golden yellow	Well	54	Good	Free			
Caroline Goodrich	Rich glossy crimson	Well	12	Medium	Free			
Celine Forestier	Canary yellow	Well	48	Good	Free			
Chromatella	Sulphur yellow	Well	84	Good	Free	May 7	May 14	May 26
Claire Carnot	Deep yellow	Well	96	Good	Free			
Climbing Devoniensis	Creamy white	Well	48	Good	Free	May 15	May 26	Aug. 9
Minnehaha	Pink	Well	144	Good	Large amount	May 17	July 6	Dec. 31
Dorothy Perkins	Shell pink	Well	96	Good	Large amount	June 24	July 13	Dec. 31
Alberic Barbier	Creamy yellow	Well	96	Good	Free	May 25	June 4	Oct. 9
Keystone	Deep yellow	Well	54	Good	Free	June 24	July 6	Dec. 31
Lady Gay	Cherry pink	Well	180	Good	Free	June 7	June 24	Nov. 30
Thousand Beauties	White to pink	Well	48	Good	Free	May 25	June 2	July 24
Dawson	Pale rose	Well	84	Good	Free	June 10	June 17	July 24
La Fiamma	Red and white	Well	96	Good	Free	June 7	June 17	July 13
Leutchstern	White to pink	Well	84	Good	Small amount	May 25	June 2	Nov. 2
Multiflora	Pure white	Well	84	Good	Large amount	May 17	May 26	June 24
Superba	Rosy pink	Well	108	Good	Free	June 7	July 6	July 15
Tennessee Belle	Rosy red	Well	108	Good	Free	May 25	June 9	July 28
Triumphant	Velvety rose	Well	78	Good	Free	May 20	June 2	Nov. 30
Newport Fairy	Pink single	Well	60	Good	Medium amount	May 17	May 26	June 24
Greville	White to red	Well	60	Good	Medium amount	April 28	June 9	Nov. 30
Hiawatha	Crimson	Well	90	Good	Medium amount	June 14	June 24	Aug. 17

Northern Light	Pink and white	Well	108	Good	Free	June 5	June 17	Aug. 9
Cecile Brunner	Pink	Well	72	Good	Free	May 7	May 17	Nov. 3
Elie Beauvilian	Salmon pink	Winter-killed						
Fanny Stolwerck	Rose, tinged yellow	Well	77	Good	Free	May 1	May 25	Oct. 26
Madam Wagram	Satin rose color	Well	60	Good	Free	May 10	May 14	May 25
Pillar of Gold	Rosy pink	Well	24	Good	Medium amount	June 1	June 7	Oct. 18
Reine Marie Henriette	Deep red	Well	48	Good	Small amount	July 16	July 23	Oct. 18
White Marechal Niel	White	Killed						
Zepherin Drouat	Bright rose	Well	24	Good	Small amount	May 20	June 2	Sept. 9
Philadelphia Crimson Rambler	Deep red	Well	72	Good	Large amount	July 28		Aug. 9
Yellow Rambler	Rich yellow	Medium	90	Good	Free	July 2	July 9	July 24
White Rambler	White	Medium	72	Good	Small amount	May 20	May 26	June 9
Pink Rambler	Pink to red	Well	144	Good	Medium amount	May 17	May 26	July 6
Climbing Mosella	Lemon white	Killed						
Crimson Rambler	Crimson	Well	48	Good	Large amount	June 21	July 8	Nov. 2
Rubin	Scarlet	Well	72	Good	Medium amount	June 7	June 18	Aug. 18
Mrs. F. W. Flight	Red, white centre	Well	120	Good	Large amount	June 7	June 18	Oct. 18
Perle des Neiges	Small, canary white	Well	54	Good	Free	May 3	May 25	Oct. 30
Pink Rover	Pale pink	Well	144	Good	Free	May 18	May 26	June 24
Prairie Queen	Bright pink	Killed						
Pride of Washington	Red to light red	Medium	96	Good	Free	June 2	June 9	July 13
Pysche	White, suffused pink and yellow	Well	48	Good	Free	May 20	June 9	Dec. 31
Russels Cottage	Silver to dark red	Well	84	Good	Free	May 10	May 22	July 2
Faunus Blumschen	Bright red	Well	108	Good	Medium amount	June 14	July 6	July 15
Frier	Pale red to white	Medium	108	Good	Free	May 26	June 2	Aug. 9
White Maman Cochet	White, tinged red	Well	60	Good	Free	June 4	June 10	June 18
American Pillar	Deep pink	Well	180	Good	Small amount	May 31	June 9	July 24
Baltimore Belle	Red to white, double	Well	156	Good	Free	June 9	June 18	Aug. 17
Birdie Blye	Rose pink	Well	72	Good	Free	May 20	June 2	Dec. 31
Climbing White Pet	White	Well	72	Good	Free	July 28	Aug. 9	Aug. 24
Christine Wright	Deep flesh pink	Well	108	Good	Small amount	May 26	June 2	July 28
Empress of China	Dark red to pink	Well	120	Good	Free	April 26	May 17	Dec. 31
Gainsborough	Large silvery pink	Well	96	Good	Small amount	May 6	May 26	July 9
White Dorothy	White	Well	168	Good	Small amount	June 18	July 6	Aug. 9
Excelsa	Deep red	Well	132	Good	Medium amount	June 21	July 6	Nov. 30
Leonie Lamesch	Red to yellow	Well	22	Medium	Free	April 26	May 26	June 24
Washington	Pure white	Well	36	Good	Free	May 9	June 24	Nov. 30
Fortunes double yellow	Orange yellow	Well	96	Good	Free	May 5	May 17	June 2
Zelio Pradel	Pure white	Well	90	Good	Free	May 25	June 2	Nov. 3
James Sprunt	Velvety red	Well	126	Good	Free	May 28	June 9	July 29
Gold of Ophir	Bright Golden Yellow	Well	66	Good	Free	May 26	June 9	Nov. 13
Marechal Niel	Yellow	Well	24	Good	Free	May 14	May 25	Jan. 31
Caroline Kuster	Orange Yellow	Well	72	Good	Free	May 1	May 14	Dec. 31
Mary Washington	White to pink	Well	54	Good	Free	May 3	May 25	Dec. 31
Reve d'Or	Coppery buff	Well	72	Good	Small amount	June 2	June 7	Nov. 30
Reine Marie Henriette	Deep red	Well	54	Good	Free	May 5	May 14	Oct. 16
Reine Olga de Wurtemburg	Vivid red	Well	84	Good	Small amount	May 20	June 2	Aug. 9
Royal Cluster	White	Well	84	Good	Medium amount	May 25	June 9	June 24
Solfaterre	Sulphur yellow	Well	30	Medium	Free	May 25	June 2	Nov. 30
Waltham Washington	White	Well	48	Good	Free	May 31	June 7	Jan. 31

SIDNEY.

CLIMBING ROSES,—*Con.*

TEST of Varieties, hardiness and mildew resistance, Planted 1914.

Name.	Description.	Wintered.	Season's growth.	Condition.	Mildew.	Began to bloom.	Full bloom.	Bloom over.
			Inches.					
Wm. A. Richardson	Orange	Well	120	Good	Free	May 26	June 9	June 24
Alister Stella Gray	Yellow orange	Well	90	Good	Free	May 6	June 2	Aug. 17
Carmine Pillar	Rosy red	Well	60	Good	Medium amount	June 14	June 24	Sept. 10
Climbing Bridesmaid	Deep pink	Well	60	Good	Free	May 3	May 14	Oct. 16
Climbing Marie Guillot	White, tinged yellow	Well	24	Good	Free	June 6	June 10	Oct. 26

Fifty-two varieties were not affected with mildew. Thirty-two varieties were affected in various degrees with mildew. Three varieties winter-killed in this climate Five varieties failed to bloom during season 1915.

Empress of China, Birdie Blye, Keystone, Waltham Washington, Mary Washington and Clotilde Soupert were all in bloom at the New Year.

ROSES.—Test of Varieties. Planted 1914.

Name.	Height when planted.	Season's growth 1915.	Condition.	Began to bloom.	Full Bloom.	Bloom over.
	Inches.	Inches.				
Alfred Colomb	6	42	Good	May 26	June 4	Dec. 31
The Bride	6	42	Good	May 3	May 14	Nov. 2
Mrs. John Laing	6	42	Good	May 14	June 5	Nov. 30
Clio	6	85	Good	May 26	June 2	Oct. 21
Souvenir de Pierre Notting	6	39	Good	April 28	May 8	Nov. 2
Mrs. R. G. S. Crawford	6	38	Good	May 18	May 26	Nov. 30
General Jacqueminot	6	48	Good	May 14	May 26	Nov. 30
Her Majesty	6	30	Mildews badly	May 18	May 28	June 18
Caroline Testout	6	24		May 28	June 4	Oct. 21
Dean Hole	6	18	Good	May 28	June 4	Aug. 9
Frau Karl Druschki	6	32	Medium	May 10	May 26	Nov. 2
Gabriel Luizet	6	72	Good	May 18	June 2	June 28
Viscountess Folkstone	6	12	Good	May 26	June 4	Oct. 21
Kaiserin Augusta Victoria	6	24	Good	May 26	June 2	Oct. 21
Ulrich Brunner	6	52	Good	June 2	June 10	Nov. 13
Le Progres	6	14	Good	May 18	May 28	Dec. 31
Prince Camille de Rohan	6	60	Good	May 3	May 14	Dec. 31

SEED PRODUCTION.

Considerable interest has been shown throughout the district on the subject of growing vegetable, flower, and field seeds. To obtain information for Vancouver island relative to the quantity and quality of the various seeds, many plants of various sorts were permitted to seed. The seeds were harvested and prepared for next season's use. The following is a list of the plants from which high quality seed was successfully saved and indicates the possible scope of the industry for Vancouver island:—

ANNUALS.

Acroclinium roseum.
Aster Blushing Beauty.
" Exhibition Wonder.
" Enchantress.
" King White.
" Giant Comet.
" Primrose Queen.
" Rose Pink.
" Ray, Delicate pink.
" Ray, Large purple
Arctotis grandis.
Bartonia aurea.
Browallia elata.
Celosia pyramidalis.
Cockscomb, dwarf.
Centaurea Cyanus.
Coreopsis atrosanguinea.
" *cardaminaefolia.*
" red and yellow selected.
Candytuft, White Rocket.
Calendula officinalis flore pleno Lemon Queen.
Calendula officinalis flore pleno Orange King.
Dianthus superbissimus.
Dimorphotheca aurantiaca hybrids.
Gypsophila elegans.
Godetia, double light pink.
Kochia trichophylla.
Lavatera rosea splendens.
Mignonette, buff.
Nasturtium, Tom Thumb, selected selfs.
Nicotiana affinis hybrids.
Nemesia, large flowered.
Pentstemon Bridgesii.
Poppy, Carnation flowered.
Schizanthus, large flowered.
Salpiglossis, large flowered.
Scabious, large flowered.
Sweet Sultan, large purple.
Sweet Pea Illuminator.
" " Maud Holmes.
" " Wedgewood.
" " Nubian.
" " Elfrida Pearson.
" " Flora Norton Spencer.
" " Ethel Roosevelt.
" " America Spencer.
" " Scarlet Emperor.
" " Lilian.
" " King White.
Tagetes signata pumila.
Zinnia elegans mixed.

SIDNEY.

PERENNIALS.

Aquilegia alpina hybrida.
“ *coerulea.*
“ *chrysantha.*
“ *canadensis nana.*
“ *flabellata alba.*
“ Rose Queen.
Anemone coronaria single mixed.
“ “ choice selected.
“ Saint Brigids.
Anchusa italica, Dropmore varieties.
Campanula grandis.
“ *persicaefolia alba.*
“ “ “ *grandiflora.*
“ “ *coerulea.*
“ *carpatica.*
“ *Medium calycanthema* single red.
“ *Medium calycanthema* single white.
“ *Medium calycanthema* single blue.
Coreopsis grandiflora.
Clematis integrifolia.
Dianthus deltoides glaucus.
“ *barbatus* double mixed.
“ “ selected.
Digitalis gloxinaeflora.
“ “ *alba.*
Daisy, large flowered mixed.
Dracocephalum Ruyschianum.
Delphinum, choice selected.
Gaillardia, crimson and gold.
Gypsophila paniculata.
Helianthus, Daniel Dewar.
“ Hoopesi.
Hesperis matronalis.
Hollyhock single red.
Helenium autumnale grandiflorum.
Lychnis chalcedonica.
Lahyrus latifolius albus.
Lupinus arboreus.
“ *polyphyllus roseus.*
“ “ mixed.
Papaver orientale selected.
“ “ Queen Alexandra.
“ “ Princess Victoria Louise.
Polemonium himalaicum.
“ “ *album.*
Thalictrum aquilegifolium atropurpureum.
Wallflower Harbinger.
“ Ruby Gem.
“ White Dane
Tulip Artus.
“ Chrysolora.
“ Couleur de Cardinal.
“ Cottage Maid.
“ Duchesse de Parma.
“ Darwin Isis.
“ “ Edmee.
Tulipa Greigii.
Tulip Gesneriana spathulata.
“ Isabella.
“ Joost Van Vondel (red).
“ La Candeur.
“ Rose Grisdelin.
“ Sunset.
“ Yellow Prince.
“ “ Rose.
Hyacinth Charles Dickens, blue.
“ Grand Lilas.
“ Gigantea.
“ King of the Yellows.
“ “ “ Blues.
“ Lord Balfour.
“ La Grandesse.
“ Yellow Hammer.
Scilla sibirica.

SHRUBS.

Clematis florida.
Crataegus Oxyacantha flore coccinec pleno.
Crataegus Oxycantha semperflorens.
Ceanothus Indigo.
“ Gloire de Plantières.
“ “ “ Versailles.
“ Albert Pittet.
“ Americana.
“ Arnouldi.
Genista scoparia.
Genista scoparia, Andreana.
“ “ *praecox alba.*
Hypericum patulum Henryi.
Malus floribunda.
“ “ *Scheideckeri.*
“ “ *flore albo pleno.*
Buddleia variabilis.
“ “ *Veitchiana.*
“ “ *magnifica.*
“ “ *superba.*
Platanus orientalis.

SIDNEY.

VEGETABLES.

Broccoli, Wilcoves Late White.
“ June Monarch.
Beet, Early Black Red Ball.
Beans, Bountiful.
“ Extra Early Valentine.
“ Valentine Wax.
“ Extra Early Refugee.
“ Refugee or 1,000 to 1.
“ Grennell Rustless Wax.
“ Wardwell Kidney Wax.
“ Fordhook Favourite
“ Round Pod Kidney.
“ Early Red Valentine.
“ Stringless Green Pod.
Carrot, Half Long Chantenay.
Cucumber, Giant Pera.
Lettuce Dreer All Heart.
“ Grand Rapids.
Musk Melon, Improved Rocky Ford.
Onion, Dark Red Beauty.
“ White Globe.
“ Danvers Yellow Globe.
“ Giant Red Wethersfield.
Pumpkin, Sweet as Sugar.
“ Jumbo.
Parsley, Double Curled.
Pepper, Neapolitan.
“ Long Red Cayenne.
Pea, Quite Content.
“ Telephone.
“ Heroine.
“ Advancer.
“ Dainty Duchess.
“ Sutton Excelsior.
“ Gradus.
“ Gregory Surprise.
“ Stratagem.
“ Juno.
“ Lincoln.
“ Premium Gem.
“ English Wonder.
“ American Wonder.
“ Thomas Laxton.
“ Gradus.
Swede Turnip, Hazard Improved.
“ “ Carter Imperial.
Tomato, Extremely Early.
“ Chalks Early Jewel
“ Jack Rose.
“ Florida Special.
“ Prosperity.
“ North Adrionack Earliana.
“ Sunnybrook Strain Earliana.
“ Alacrity.
Water Melon, Red Citron.

SIDNEY.

REPORT OF EXPERIMENTS ON THE FRUIT FARM OF THOS. A. SHARPE, SALMON ARM, B.C.

The snow came on in the autumn of 1914 before any very severe frost was in the ground, and the snowfall for the winter of 1914 and 1915 was pretty heavy for this district. The snow melted without any rush in the spring of 1915 and was mostly all absorbed by the land, thus furnishing a moist seed bed for all seed sown. The season was moderately wet.

The fruit crop last season was on the whole a fairly good one, and prices more satisfactory than for some years past. This applies to both small and tree fruits. The trouble with apple scab, perhaps owing to the showery weather and consequent warm moist air, was a good deal more prevalent than for some time past.

A good many varieties in the experimental orchard fruited this year for the fifth year, and as quite a number of them do not appear to be of sufficient value to merit continued cultivation, a number have been budded to other promising but untested varieties, and more of this will be done as the tests call for.

A small orchard of apples and one of cherries was planted to test as a commercial venture. The trees have made a satisfactory growth and many of the cherry trees bore a small crop last summer. As the cherries from this district are about the last to come onto the market, a better price is obtained here than by growers in districts where the fruit has more competition, and it is to be hoped that more cherries will be grown on the uplands. Ten trees, five each of Olivet and De Planchoury planted in the spring of 1908 have averaged per tree, for the last four years, $3.50.

Several of the pear trees planted in the spring of 1911 bore specimens in 1915, and two varieties, the Margaret Marallat, a large October pear of good quality and a medium sized pear named Eva Baltet produced fine crops considering the age of the trees, and these varieties should prove of value in this locality. Of the better known varieties, the Anjou and Dr. Jules Guyot produced good crops and promise to be profitable here.

Plums.—Several varieties of plums new to this district fruited freely, and of these several are promising in a commercial way as the trees are vigorous growers, productive, and the fruit is of a desirable size, beauty and quality.

The most promising blackberry so far tested is the Eldorado, the canes being vigorous and productive, the fruit large, of good quality and a good shipper.

The best raspberries so far tested are the Cuthbert and Herbert. The St. Regis everbearing raspberry has also been tested, but in this district it is lacking in quality and the berry is crumbly and very uneven in size.

SALMON ARM.

SUBSTATIONS.

FORT VERMILION, PEACE RIVER DISTRICT, ALTA.

This Substation is situated in the valley of the Peace river in latitude 58° 36′. It is over three hundred miles north of Edmonton, and is in charge of Mr. Robert Jones, who has prepared the details for the following report:—

The spring of 1915 was a very fine one. The snow started to go in the latter part of March and, the thaw continuing, was all gone by April 8. The frost was out of the ground enough to plough April 12 and land was in condition for seeding by April 15, as early as it has been for many years. Trees and shrubs came through the winter well and strawberries were wintered satisfactorily. The lowest temperature in April was on the 21st when it was 16·1° F., the highest was 69·0 on the same date. There was frost on twenty-one days during the month. In May the lowest temperature was 24° on the 13th and the highest 77° on the 26th. There was frost on nine days in May. There were good rains, which caused rapid growth and on June 11 conditions were very favourable for many shrubs and herbaceous plants in flower. On June 12, there was a decided change to cooler weather. On the night of the 13th, there were 3·5° of frost; on the night of the 14th the temperature went down to 17·9° F. or 14·1° frost. Tender plants, such as tomatoes, squash, melons, cucumbers, beans, corn and many flowers were completely killed. The blossoms on all of the lilacs and other flowering shrubs were killed and foliage of trees injured. Potatoes were cut down to the ground, but recovered again though the crop was later. For all the years the writer has spent in the North, this is the severest frost that has been experienced at this time of year. Very dry weather followed the frost and berries were small. The weather was warm in July with good rains so that the hardier vegetables recovered fairly well. The lowest temperature was on the 1st, when the temperature was 36·5° F., the highest was 84·5° on the 7th. There was no rain in August from the 6th to the 29th. The highest temperature in August was 92° on the 12th and the lowest 37° on the 25th. In September there was frost on fourteen days, the lowest temperature being 14·9° on the 18th and the highest 78° on the 4th. There were fourteen and a half degrees of frost on the 15th when corn was killed.

FRUIT.

Fruit was promising until the severe frost of June. At that time the Charles apple had about one dozen apples on it; the Cheney plum also had fruit. All the fruit fell off after the frost.

APPLES UNDER TEST.

Two Alberta, two Charles, two Tony, two Prince, two Golden, two Magnus, two Silvia, two Robin, two Pioneer, one Parma, one Charlamoff, one Morden, two seedlings of Alberta, two seedlings of Golden, three seedlings of Jewel, two seedlings of Silvia.

These are the oldest trees and are doing only moderately well.

APPLE SEEDLINGS.

Number of small apple trees alive and doing well from seedlings planted in spring of 1914:—

22	Anis Seedlings	alive and doing well,	the tallest of these are	16	inches high.
25	Iowa Beauty Seedlings	"	"	16	"
10	Moscow Pear Apple Seedlings	"	"	14	"
16	Hibernal Seedlings	"		11	"
24	Patten Duchess Seedlings	"		12	"
18	Hoadley Seedlings	"	"	17	"
7	Lowland Raspberry Seedlings	"	"	14	"
17	Grandmother Seedlings	"	"	15	"

Out of the 170 sent, 33 have been lost. The Iowa Beauty Seedlings seem to be the hardiest of them all.

CURRANTS.

BLACK CURRANTS, Names of Varieties and Yield obtained. All picked from July 20 to 29, 1915.

No. of Bushes.		Pints.
2	Bang Up	15
2	Norton	6
2	Kerry	10
2	Climax	20½
2	Topsy	17½
2	Eclipse	11
2	Magnus	14
2	Saunders	9
2	Ethel	13
2	Ontario	12
2	Eagle	6

RED CURRANTS, Names of Varieties and Yields Obtained.

No. of Bushes.		Pints.
2	Simcoe King	30
2	Rankins Red	19
2	Greenfield	52
2	Moore Seedling	35½
2	Goliath	29
2	Red Dutch	26
2	Large Red	34
2	Long Bunched Holland	18
2	Cumberland Red	23

WHITE CURRANTS, Names of Varieties and Yields obtained. All picked on July 29.

No. of Bushes.		Pints.
2	Large White	16½
2	White Grape	9
1	White Cherry One only, bush quite small.	3
2	White Kaiser	12
2	White Dutch	6½

Reported on August 16, 1915.

RASPBERRIES.

The raspberries were picked on August 13. The yields were small on account of the June frost. Herbert yielded 3 pints of fruit, and Heebner 4 pints.

SEEDLING STRAWBERRIES.

There are a number of seedling strawberries of the following varieties growing here: Daniel Boone in bloom June 8, Beder Wood, World Wonder, Daisy in bloom June 9, Carrie, Senator Dunlap in bloom June 11. All were good strong plants.

FORT VERMILION.

VEGETABLES.

Considering the drought and cold experienced during the spring and early summer, the vegetables gave a very satisfactory yield. Although the rainfall was not heavy there was such as to ensure a fair growth on well-tilled land. Table beets and carrots were somewhat below the average. This was probably on account of the seed used being some that was left over from the spring of 1913.

PEAS, TEST OF VARIETIES.

Ten varieties of garden peas were tested this season. All were planted on April 23 to 26. Four drills of each variety were sown in rows 33 feet long and 12 inches apart. Some of the earlier varieties were just coming into bloom on June 15 when the frost occurred, the blossoms being killed as well as part of the vine. It was some time before they recovered from the effects of this setback, and, in consequence, the peas were later than usual coming into use. The peas were a medium size and of good quality.

The following are the dates when the peas were ready for use, also dates when ripe:—

Variety.	Height of plant.	Length of pod.	Ready for use.	Ripe and pulled.
	in.	in.		
Stratagem	12	3	July 19	Aug. 4
Witham Wonder	14	3¼	July 27	Aug. 5
Admiral Dewey	36	3	July 21	Aug. 12
Henderson First of All	20	2	July 16	July 31
Gradus	36	3	July 20	Aug. 2
Gregory Surprise	24	2½	July 24	Aug. 2
American Wonder	30	2¾	July 23	Aug. 10
Dwarf Telephone	14	3½	Aug. 13	July 28
Premium Gem	24	2½	July 22	Aug. 3
English Wonder	15	2¾	July 21	Aug. 5

CORN, TEST OF VARIETIES.

The past season was quite unfavourable for the growing of corn on account of the cool weather experienced during the spring. The corn had just got nicely started when it was cut down by a severe frost that occurred on the night of June 14-15, when there were 13 degrees of frost, some plots being completely killed out. What recovered from this setback did fairly well, but did not reach the usual height. All plots were cut on September 17 and 18, after another severe frost which occurred on the night of September 15, when we had 14½ degrees of frost. The weight of the varieties tested was taken while still green. None was fit for use.

The varieties of corn were planted on April 28 and 29, in hills 30 inches apart each way. The soil is a dark clay loam, which was ploughed out of hay sod in the early part of July, 1914, after the hay had been removed, and manure was applied at the rate of about 15 tons per acre and then disced in and the harrow run over a number of times during the autumn to conserve the moisture. In the spring of 1915, this land was again lightly disced and then harrowed over with the smoothing harrow and the seed planted at once.

Variety.	Size of Plot.	Planted.	Cut.	Average height.	Condition when cut.	Remarks.
Malakoff.......	4 rows, 33 ft. long.	April 29..	Sept. 18..	24 inches.	In tassel, Aug. 6. In silk, Aug. 13.	Cobs very small and quite green.
Early Malcolm.	1 row, 33 ft. long.	April 29..	Sept. 18..	....	In tassel, Aug. 3. In silk, Aug. 19.	Doughy.
Early Cory.....	2 rows...........	....	Sept. 18..	....	In tassel, Aug. 12. In silk, Aug. 21.	Cobs, just formed.

White Squaw—Completely killed by the frost in June. I did not re-seed, as it was then too late; as was also the plot that was planted with Squaw Corn seed from Colorado.

GARDEN TURNIPS, TEST OF VARIETIES.

Eight rows, 33 feet long, 24 inches apart of the following varieties of garden turnips were sown on May 5.

The land on which the turnips was grown was in summer-fallow the previous year with manure applied at the rate of twenty wagon-loads per acre before the land was ploughed. The harrow was run over the land as soon as it was ploughed, and it was kept well harrowed during the balance of the summer and autumn. The yield was calculated from these eight rows. The first was in use on July 4, and from that on throughout the summer.

Variety.	Sown.	In use.	Harvested.	Yield in pounds.	Yield per acre.		Size.	Quality.
				per plot.	tons.	lb.		
Extra Early White Milan.............	May 5	July 4	Sept. 18	725	21	1500	very large	good.
Golden Ball........	May 5	July 12	Sept. 18	450	13	1000	small.....	medium.
White Stone.........	May 5	July 8	Sept. 18	582	17	920	medium..	fine and of a good flavour.
ONIONS, TEST OF VARIETIES.								
White Barletta.....	April 21	June 30	Sept. 14	3 rows, each 33 ft. long. Yield 42 lbs.			medium..	fine.
Early Flat Red Wethersfield	April 19	June 30	Sept. 14	12 rows, each 33 ft. long. Yield 110 lbs.			large......	good.
Large Red Wethersfield	April 21	June 28	Sept. 14	8 rows, each 33 ft. long... Yield 91 lbs.			medium..	good.
Danvers Yellow Globe............	April 19	July 3	Sept. 14	6 rows, each 33 ft. long... Yield 72 lbs.			large......	fine.
TABLE BEETS, TEST OF VARIETIES.								
Early Eclipse.......	April 22	July 29	Sept. 16	3 rows, each 33 ft. long... Yield 80 lbs.			medium..	fair.
Covent Garden....	April 19	Aug. 4	Sept. 16	3 rows, each 33 ft. long... Yield 75 lbs.			small.....	good.
CARROTS, TEST OF VARIETIES.								
Extra Early Horn..	April 22	July 15	Sept. 18	6 rows, each 33 ft. long. Yield 78 lbs.			medium .	fine.
Chantenay	April 22	July 10	Sept. 18	6 rows, each 33 ft. long... Yield 81 lbs.			large......	fair.

FORT VERMILION.

PARSNIP, TEST OF VARIETIES.

Variety.	Sown.	In use.	Harvested.	Size.	Quality.
Hollow Crown......	April 22..	July 30..	Sept. 18. Yield from 6 rows, each 33ft. long, 90 lbs.	large......	Very fine.

BEANS, TEST OF VARIETIES.

Four plots of 1/60 of an acre of the following varieties of beans were planted on May 6 in hills about 2 feet apart each way: Early Red Valentine, Challenge Black Wax, Golden Wax and Black Wax. Challenge Black Wax and Early Red Valentine were completely killed out by the frost in June. A few hills of the Golden Wax and Black Wax escaped this frost and came on quite finely. Golden Wax was fit for use on August 2, and Black Wax on the 10th. These two last mentioned would have ripened but for the early frost in September, but being somewhat green when this frost occurred, they were ruined.

PARSLEY, TEST OF VARIETIES.

Variety.	Sown.	In use.	Harvested.	Size.	
Exquisite Dwarf Curled..........	April 24.	July 14..	Sept .19. 2 rows each 33ft. long..........	Quite large and thick.	

LETTUCE, TEST OF VARIETIES.

Two rows each of the following varieties of lettuce were sown this spring with good results, although the lettuce was inclined to go to seed earlier than usual on account of the dry weather.

Variety.	Sown.	In use.	Quality.
Black Seeded Simpson..........................	April 21....	May 31...	Very good and crisp.
Grand Rapids..................................	April 21....	May 21....	Fine.
New York......................................	April 21....	May 25....	Very crisp and tender.

RADISH, TEST OF VARIETIES.

Three varieties of radish were under test this season, the following being the dates of sowing and dates when fit for use. The radish also went to seed very quickly after coming into use.

Variety.	Sown.	In use.	Quality.
Scarlet White Tipped..........................	April 21....	May 27....	Fine.
Rosy Gem......................................	April 21....	May 31....	Good.
French Breakfast..............................	April 21....	May 28....	Very fine.

FORT VERMILION.

CELERY, TEST OF VARIETIES.

Three varieties of celery were sown in hotbeds on April 14, and were transplanted out into trenches on June 3, one trench of each variety. The trenches were twelve inches deep and about five inches of well-rotted manure were placed in the bottom of the trench and four inches of soil on top of manure. As the plants grew, the soil was filled in and after they were above the trenches the plants were kept hilled up during the season with very good results. Each trench was 33 feet long.

Variety.	Transplanted.	In use.	Size.	Quality.	Harvested.	Weight from one row.
Paris Golden Yellow	June 3	Aug. 4	large	good	Sept. 22	80 lb.
White Plume	June 3	Aug. 10	medium	very fine	Sept. 22	74 lb.
Golden Self Blanching	June 3	Aug. 14	small	good	Sept. 22	62 lb.

CABBAGE, TEST OF VARIETIES.

The following varieties of cabbage were sown in the hotbeds on April 17 to 24, as the hotbeds were got in readiness, and were transplanted out on the open ground on May 17-18. The season was rather dry for the best results.

The following are the dates when first in use and average weight per head:—

Variety.	In use.	Average weight per head.	Quality.
		lb.	
Copenhagen Market	Aug. 4	7	Very solid.
Early Paris Market	Aug. 9	6½	Fine.
Danish Ballhead	Aug. 14	7	Good.
Early Jersey Wakefield	July 20	4	Fine and of good flavour.
Red Rock	Aug. 20	7¾	Very solid.

CAULIFLOWERS, TEST OF VARIETIES.

Two varieties of cauliflower were sown in the hotbeds on April 14 and were transplanted on May 17. The heads were of medium size and a few days later than usual coming into use, but of a fine quality.

Variety.	In use.	Average weight.	Transplanted out.
		lb.	
High Grade Dwarf Erfurt	July 22	6¼	May 17.
Paris	July 26	5	May 17.

ASPARAGUS.

A fine crop was again obtained this season from the old beds of Columbia White. The asparagus was in use May 20 to the end of July. It was crisp and fine and quite large.

FORT VERMILION.

RHUBARB, VICTORIA.

Rhubarb was in use from May 18 until the frost in September. It was fine and very large and tender.

MISCELLANEOUS VEGETABLES.

All of the squash, melons, cucumbers and pumpkins were doing well and the vines were quite large. Some of them were in bloom when the frost occurred and the most of them were completely killed. One hill of pumpkin, Large Connecticut Field, and one hill of citron started again from the root and with careful treatment these two hills did very well, more especially the pumpkin, as on the 19th of September, fourteen large fine pumpkins were picked from this one hill, weighing 15 pounds to 30 pounds and from the one hill of citron, four quite large citrons were picked, weighing 5 pounds each.

Fifty fine large plants each of the following varieties of tomatoes were transplanted from the hotbeds on May 18. Alacrity No. 2-24-9 and Alacrity No. 16 of 1914; also Alacrity 23-13; also fifty plants Atlantic Prize, and the same number of Sparks Earliana, C.E.F. strain. All were doing well and the most of them were in bloom when the frost occurred in June. Most of them were completely destroyed. A few of them started up again from the roots but did not amount to anything. Soon after the frost in September a few very green and very small ones were picked.

POTATOES, TEST OF VARIETIES.

Five varieties of potatoes were planted on the 16th and the 19th of April in plots of one-fifteenth of an acre on land on which grain had been the previous season. Manure was applied after the grain had been harvested and the land fall ploughed.

The land was harrowed once in the autumn and well harrowed in the spring before the rows were made. The rows were 34 inches apart and the sets were placed 10 to 12 inches apart in the row.

Frequent cultivation was given during the season, with only a medium growth of tops, as the tops were badly killed back by the frost in June. It looked at one time as though we might have no potatoes whatever, but, with favourable weather after the frost, they recovered and did quite well.

The potatoes were taken up on the 11th of September. The crop was not large in total yield but in quality and size of tubers the results were quite favourable.

The following were the results obtained:—

Variety.	Planted.	In use.	When dug.	Yield from plot.	Yield per acre.		Form.	Colour.	Size.	Remarks.
				lb.	bush.	lb.				
Rochester Rose....	April 17.	July 26.	Sept. 11.	1,190	297	50	Oval....	Red....	Medium	All of marketable quality.
Early Rose	April 17.	July 28.	Sept. 11.	1,460	365	..	Oval....	Red....	Large...	This date when in use is somewhat later than usual on account of the frost.
Carman No. 1....	April 19.	Aug. 6.	Sept. 11.	1,283	304	15	Oval....	White...	Medium large.	
Gold Coin	April 19.	Aug. 2.	Sept. 11.	1,393	348	15	Oval....	White...	Large...	
Irish Cobbler.....	April 19.	July 30.	Sept. 11.	1,220	305	..	Round..	White...	Medium	

FLOWERS.

The following flowers were under test this season at this Station. The more tender varieties were sown under glass on April 14 to 17. The hardier varieties were sown in open ground from April 30 to the middle of May. The severe frost of June gave most of them a severe setback, but while a number were killed, those that escaped this frost came along nicely and produced a profusion of blooms which were much admired by the visitors to the Station. All were in bloom until the severe frost of September 18.

The following are the names of the different varieties under test, and dates when first in bloom:—

Pansies on 1-year old plants were in bloom April 17.

On the 30th of April there were transplanted from the old flower garden a number of Dianthus of the different varieties. These were in bloom from the 6th to the 14th of July and continued in bloom until well into the autumn.

Variety.	In bloom.	
Antirrhinum, dwarf	July	9.
Antirrhinum, fancy mixed	"	12.
Aster, Semple's mixed	August	2.
Aster, Daybreak, mixed	"	14.
Aster, Pink Beauty	"	13.
Aster, Truffauts Paeony Flowered	"	4.
Aster, Giant Comet	"	6.
Brachycome, Swan River Daisy	July	4.
Calendula, mixed	"	1.
Calliopsis, mixed	August	24.
Candytuft	June	18.
Centaurea imperialis, or Cornflower, all colours	July	21.
Celosia, killed by frost in June.		
Chrysanthemum, annual	"	28.
Clarkia	"	19.
Cosmos, only one was left after the frost	August	28.
Dimorphotheca, or South African Daisy	July	1.
Daisy, Snowball	June	30.
Eschscholtzia, mixed, California Poppy	"	3.
Lobelia tenuior	August	28.
Linum, or Flowering Flax	July	2.
Marigolds, mixed	"	4.
Marigolds, dwarf mixed	"	6.
Mignonette, finest mixed	"	17.

The three varieties of Nasturtiums were just coming in bloom when the first frost occurred in September.

Nicotiana affinis	July	14.
Pansies, mixed, sown in the open-ground	May	2.
Pansies, Giant Flowered	July	12 and 15.
Phacelia	"	26.
Petunias, mixed	"	8.
Phlox Drummondii	"	2.
Abronia umbellata	August	2.
Nolana	"	2.
Poppies, Improved Shirley	July	12.
Poppies, Cardinal	"	15.
Poppies, Double	"	10.
Rudbeckia speciosa bicolor	August	9.
Rhodanthe	July	22.
Salpiglossis	"	26.
Scabiosa	August	11.
Stocks, Ten Weeks, mixed	July	12.
Stocks, Dwarf	"	14.
Verbena, mixed	"	16.
Zinnia, Improved Mammoth. All killed by the June frost.		
Helichrysum, mixed	August	4.
Schizanthus	July	2.
Arctotis	August	2.

FORT VERMILION.

Sweet Peas—

Mrs. Cuthbertson	July	28.
Mrs. Hugh Dickson	"	17.
Irish Belle, or Dream	"	23.
King Edward	"	26.
Dainty Spencer	"	24.
Sweet Pea, New Burpee Blend of Re-selected Spencer	"	20.
Cupid Sweet Pea	"	16.

The following varieties of perennials were in bloom during the past season. Below are the names of each and the dates when in bloom:—

Variety.	In bloom.	
Delphinium (Larkspur)—		
Seedling Blue	June	7.
Large White	"	20.
Hybridum	"	29.
Gaillardia—		
Crimson and Gold	"	28.
Dwarf	July	2.
Dark Red Centre	"	8.
Hesperis matronalis	June	2.
Achillea Ptarmica fl. pl	July	12.
Balsams, mixed	"	30.
Sunflowers	August	6.
Kenilworth Ivy	July	8.

Kochia or Summer Cypress made a fine showing again this summer.

In the flower garden was put some rustic work which was covered on the two sides with a wild cucumber vine, on one end with Japanese hop and on the front end with Scarlet Runner bean. It was very pretty indeed.

ORNAMENTAL SHRUBS AND TREES UNDER TEST, ENDING JUNE 12, 1915.

		Notes.
2	*Acer tataricum Ginnala* (Ginnalian maple)	Doing moderately well.
2	*Acer saccharinum (dasycarpum)* (Silver maple)	Fairly only.
4	*Acer Negundo* (Box Elder or Manitoba maple)	One tree 11 ft. 10 in. high, 1 ft. 3 in. girth. One tree 12 ft. 2 in. high, 1 ft. 9 in. girth. Doing finely.
2	*Acer pictum*	Quite good.
2	*Picea excelsa Remontii*	Doing well.
2	*Amelanchier vulgaris*	Fine.
1	*Betula alba laciniata* (Cut-leaved birch)	Good.
4	*Berberis Thunbergii*	In bloom May 28, very fine.
1	*Clematis montana*	
2	*Caragana arborescens* (Siberian pea tree)	In bloom May 20. A large number of these, all doing fine.
2	*Caragana grandiflora*	In bloom May 22, very fine.
2	*Caragana frutescens*	In bloom June 1, good.
2	*Caragana pygmaea*	In bloom June 2, good.
2	*Cotoneaster tomentosa*	In bloom June 1, good.
2	*Crataegus Arnoldiana*	Doing finely.
2	*Celtis occidentalis*	Doing finely.
1	*Euonymus linearis*	In bloom May 26, doing well.
4	*Crataegus Carrieri*	Good.
2	*Ceanothus americanus*	Very fine.
2	*Lonicena alpina*	In bloom May 20, good.
3	*Lonicera Mundeniensis*	Fine.
2	*Lonicera Fenzlei*	In bloom June 2, good.
2	*Lonicera tatarica virginalis*	In bloom June 4, fine.
2	*Lonicera Sullivantii*	In bloom June 4, fine.
2	*Delphinium,* Larkspur seedling, blue	In bloom June 7, fine.
1	*Diervilla lutea*	Good.

FORT VERMILION.

ORNAMENTAL SHRUBS AND TREES UNDER TEST., ETC.—*Continued.*

3	*Euonymus europaeus ovatus*	In bloom May 29, doing well.
2	*Hydrangea paniculata grandiflora*	Good.
2	*Ligustrum amurense* (Amur privet)	Good.
2	*Fraxinus pennsylvanica lanceolata* (green ash)	Good.
1	*Populus angustifolia* (poplar)	Good.
2	*Lycium europaeum* (Matrimony vine)	Good.
2	*Philadelphus Lemoinei* Mont Blanc	Moderately good.
2	*Pseudotsuga Douglasii* (Douglas fir)	Fine.
1	*Spiraea Billardii*	In bloom June 11, very fine.
2	*Quercus rubra* (Red oak)	Good.
2	*Rhamnus Frangula* (Alder buckthorn)	Good.
1	*Ribes aureum* (Missouri currant)	In bloom May 25, very fine.
2	*Cupressus* (*Retinospora*) *pisifera*	Good.
6	White birch	Good.
1	*Syringa amurensis*	Good.
1	*Syringa japonica* (Tree lilac)	Doing well.
2	Lilac, Madame Casimir Perier	Doing finely.
2	Lilac, Chas. Joly	In bloom June 8, very fine.
2	Lilac, Chas. Tenth	In bloom May 29, extra fine.
2	Lilac, Michel Buchner	Good.
2	Lilac, Emile Lemoine	In bloom June 6, very fine.
2	Lilac, Jacques Calot	Good.
6	*Syringa villosa*	In full bloom June 10, very fine, 10 ft. 3 in. high.
2	Lilac, Congo	In bloom May 27, extra fine.
2	*Syringa pekinsensis*	Good.
2	Lilac, Mlle. Fernande Viger	Good.
2	*Thuya occidentalis Columbia*	Good.
2	Lilac, Mde. Abel Chatenay	Good.
1	*Spiraea arguta*	In bloom May 21, very fine.
6	*Salix Voronesh* (Golden willow)	Good.
6	*Thuya occidentalis*	Good.
2	*Thuya occidentalis globosa*	Good.
1	*Thuya occidentalis Hoveyi*	Good.
1	Viburnum molle	Good.
1	*Syringa chinensis* (*Rothomagensis*)	Good.
1	Lilac (No name)	In bloom June [illegible], very fine.
1	*Hippophae rhamnoides* (Sea buckthorn)	Good.
1	*Rose Delicata*	Good.
1	*Rosa rugosa alba*	Good.
12	*Spiraea sorbifolia*	Very fine.
3	*Amelanchier* (June berry or Saskatoon)	In bloom May 2[illegible].

FORT VERMILION.

GROUARD, LESSER SLAVE LAKE, ALTA.

The following report was prepared by Brother Laurent, O.M.I., the mission with which he is connected having charge of the work at Grouard.

The season of 1915 was fifteen days earlier for seeding than in 1914. The work of preparing the soil commenced the first week in April and the seeding was done from the 15th to the 25th. Germination took place the week following and growth continued regularly until the end of the season.

On March 10, seed of Sparks Earliana tomato, Chalks Early Jewel, Magnus and Golden Queen tomato was sown in hotbed. All were transplanted three weeks later and finally set out in the open on June 1 and 2. On the same date seed was sown of White Plume, Paris Golden Yellow and Large Dwarf White celery, and the plants were set out in the second week of June. On April 2, seed was sown of Alacrity, Adirondack, and Sunnybrook Earliana tomato, also Cayenne pepper, the latter of which ripened some fruits. The plants from this sowing of April 2 were transplanted in hotbeds three weeks later, four inches apart, and planted outside on June 2. This last sowing suffered less from transplanting than the first.

Cabbage seed was sown April 6 in the hotbed of the varieties Paris Early Market, Early Jersey Wakefield, Danish Roundhead, Express and Etampes. The early varieties transplanted May 29 were ready for the table on June 20. The other autumn varieties transplanted to the garden on June 1 gave an excellent yield as did the cauliflowers, Early Dwarf Erfurt, Snowball and Gilt Edge.

Radishes.—Early White Tipped was the best. French Breakfast became hollow.

Lettuce.—Nonpareil and Unrivalled were excellent.

Carrots, sown April 6.—Early Short English, Half Long Chantenay and Carter Favorite all did well.

Onions, sown April 16.—Extra Early Wethersfield, Yellow Globe Danvers, Small White Barletta and White Queen were all eaten by the small white maggots.

Table Turnips, sown April 16.—Early White Milan, Snowball, Golden Ball, Carter Invicta started well but were all destroyed by the maggots.

Beets, sown April 16.—Round Red Eclipse, Dark Blood Red, Egyptian and Half Long Red. The first was the earliest ready for the table.

Garden Peas, sown April 16.—Alaska, ready on July 10. Planted May 12—Sutton Excelsior, Stratagem, Thos. Laxton, Gregory Surprise and Admiral Dewey.

Butter Beans, planted May 18.—Challenge and Valentine. Ripened August 1. The first variety is the better.

Corn, planted May 11.—Early Malcolm and Squaw. The latter variety gave some ripe ears.

Summer Squash.—Summer Crookneck, White Bush and English Vegetable Marrow all gave fine fruit but it is little appreciated here. They were sown under glass April 15 and transplanted to the garden on June 3. Large fruited squash received the same culture as the preceding and ripened well, some specimens being 30 pounds in weight.

GROUARD.

Potatoes, planted May 16 and harvested September 15.—Early Rose, Rochester Rose, Early Long Six Weeks Rose. There was no appreciable difference in the yield which was 225 bushels per acre.

The flower garden gave satisfaction as usual. There were 25 kinds of the commoner annuals and fifteen herbaceous perennials; among others, 4 varieties of German Iris which were in flower June 18.

Flowering Shrubs.—Common Lilacs in varied colours and *Syringa villosa* commenced to flower May 29 and gave a profusion of bloom during all the month of June. *Spiraea arguta* flowered early in May. *Hydrangea paniculata* flowered throughout August.

Currants and Strawberries.—Currants and strawberries gave an abundant harvest as did the large cultivated varieties of strawberries.

REPORT BY W. D. ALBRIGHT, BEAVERLODGE (GRANDE PRAIRIE), ALTA.

VEGETABLES.

Contrary to previous experience, early planting of gardens proved advantageous in most cases this year. The garden here was a partial exception, for the reason that cutworms devastated the early plantings of lettuce, onions, radishes, carrots, beets, cabbage and cauliflower. They spared, however, all but the final planting of peas, made late in May. Of the other vegetables mentioned, best results were obtained from plantings of May 4, and thereabouts. This was following a soft snowfall, unattended by frost, which favoured us about May Day. The cabbage and cauliflowers sown in the hotbed were not transplanted until well on into June, but nevertheless did well, every head forming solid, even of the late Danish Ballhead. Cucumbers, pumpkins, squash, beans and corn were mostly planted in hills with hog manure beneath, this being the freest from weed seeds of any we had. The hog manure was probably a mistake, for germination of these things was tardy and subsequent growth slow, whereas a row of Golden Bantam corn planted without manure, germinated sooner, producing an unbroken row, which eventually, when the warm weather came, responded surprisingly and when cut with frost had made a beautiful even row about three feet tall and with ears very near the boiling stage. It is probable that with more care it could have been forced to the development of usable ears. The beans, squash and pumpkins were neglected as utterly hopeless, until quite late in the season, when the few plants in sight were hoed as a matter of form. There followed a period of warm showery weather and their progress was astonishing. The one Longfield pumpkin vine formed a dozen fruits, the largest girthing 34 inches, and while not quite ripening, it was sufficiently mature to cook well for pies. The squash was the same. Summer Crookneck ripened first, though some of the English Vegetable Marrow and Scallop Bush matured sufficiently to use. All the usual winter vegetables were had in quantity, from parsley to parsnip and salsify. All, too, were of superior texture and flavour, the carrots, cabbage, cauliflower and parsnips being particularly delicious. Parsnips and salsify, with us, however, grow very fibrous branching roots, even in deep tilled soil. Four kinds of peas kept the table supplied for a month to six weeks and a mess of second crop was picked September 11. Gregory Surprise surprised us by affording a picking two or three days ahead of the excellent Gradus. Thos. Laxton and Excelsior were later. Early Paris Market was the first cabbage to mature, while of the two kinds of cauliflower, the Extra Early Dwarf Erfurt headed better than the Snowball. Eclipse, Early Model, Crosby Egyptian and Witham Fireball beets, sown May 4, yielded well. The onions were devastated by cutworms. Yellow Globe Danvers and Extra Early Red

[BEAVERLODGE.

Wethersfield were perhaps the best. Asparagus grown from seed sown late in 1914 wintered successfully, as did Victoria rhubarb, and several ornamentals, including lupines and hollyhocks. Several dozen crowns of asparagus received from Ottawa in 1915 started soon after transplantation and promise well. Strawberry plants arrived in a dark and wilty condition due to the long trail trip, and did not survive.

Out of fifty seedlings of Manitoba maple and fifty of caragana received from Lacombe, about forty of each sprang into vigorous growth.

REPORT OF REV. FATHER FALAIZE, FORT RESOLUTION, GREAT SLAVE LAKE.

The spring this year was extraordinarily early; on May 18 the lake was already free of ice; the first part of May, however, was not very warm.

The soil was in good condition by the second week of May and by the 26th of the month the sowings were all done. The next day a light rain came which helped in the germination of the seeds.

The first two weeks of June were wet and cold and the soil began to get hard. As the potatoes had started slightly many rotted. Some commenced to appear above ground on June 21, but they were not fully up until June 28 to 30.

From July 10 to 22 great heat was experienced; everything was suffering when on the 22nd a beneficial rain came which lasted two hours and which started vigorous growth. Several good rains followed so that good results have been obtained with everything.

From September 9 hard frost, with some hail and snow, was experienced and vegetation was stopped.

The following temperatures will give some idea of the season: April, max. 48° F., min. 2° F. May, max. 58·6° F., min. 34·2° F. June, max. 56·2° F., min. 36·6 F. July, max. 73·2° F., min. 46·4° F. August, max. 72·8° F., min. 50·8° F. September, 49·6 F., min. 33° F. October, max. 32·4° F., min. 22·3° F.

The harvest of potatoes was very good, although it was 200 sacks less than that of last year. At the neighbouring forts, however, especially at Fort Smith, all were frozen during the first days of August and again later. Here not one was frozen.

The cabbage succeeded well although they were badly attacked by a little worm in the ground, especially the Early Winningstadt and Early Market. The Premium Flat Dutch has resisted it well. Average heads of the Early Winningstadt weighed 7 pounds; Early Market, 6 pounds; and Premium Flat Dutch, 8 pounds. The Extra Early White Milan turnips were 6 and 7 pounds in weight, Robertson Golden Ball 7 to 12 pounds and the Early Snowball weighed 6 and 7 pounds.

No new seed was received in 1915 as the boat which carried our supply was lost in the rapids.

VEGETABLES.

Kind and Variety.	Quantity sown.	Date of sowing.	Date of germination.	Date when ready for use.	Date of harvesting.	Quantity harvested.
Carrots—						
Half Long Chantenay...	½ pkt.......	May 19....	May 29..	Aug. 10....	Sept. 20.....	100 lb.
Ontario Champion......	½ "	" 19....	" 29..	" 10....	" 20....	125 lb.
Turnips:						
Extra Ey. White Milan..	1 "	May 20....	May 27..	July 10....	Sept. 18....	1 bag.
Early Snowball.........	1 "	" 20....	" 27..	" 10....	" 18....	1½ bags.
Robertson Golden Ball..	1 "	" 19....	" 29..	" 20....	" 24....	3 bags.
Parsnip:						
Hollow Crown..........	1 "	" 19....	Did not germinate			
Beet:						
Witham Fireball..........	½ "	" 19....	May 31..	Aug. 10....	Sept. 20 ...	95 lb.
Peas:						
Sutton Excelsior.........	½ "	" 19....	June 3..	Aug. 1....	Sept. 24....	8 lb.
Thos. Laxton...........	½ "	" 19....	" 3..	" 1....	" 24....	8 lb.
Gradus...............	½ "	" 19....	" 4..	" 1....	" 24:...	9 lb.
Stratagem...............	½ "	" 20....	" 4..	" 10....	" 24....	7 lb.
Cabbage:						
Premium Flat Dutch....	¼ "	" 20....	May 29..	Sept. 15....	Oct. 15....	40 heads.
Early Winningstadt	½ "	" 20....	" 29..	Aug. 20....	Sept. 25....	45 heads.
Early Market............	¼ "	" 27....	June 5..	" 20....	" 25....	30 heads.
Celery:						
Unnamed...............	¼ "	" 19....	....	....	" 24....	20 lb.
Lettuce:						
Extra Ey. Paris Market.	1 "	" 27....	June 6.	July 8....	....	
Potatoes:						
Rochester Rose.........	25 lb........	" 23....	" 30..	....	Sept. 21....	1 bag.
Vick Extra Early........	25 lb........	" 23....	" 30.	....	" 21 ...	1 bag.
Reeves Rose............	25 lb........	" 23....	" 30..	....	" 21....	1 bag.
Early Rose.............	60 bags.....	" 21–25.	" 28..	Sept. 1....	" 18–22.	350 bags.

FLOWERS.

Kind and Variety.	Date of sowing.	Date of germination.	Date when transplanted.	Growth and date of flowering.
Asters (mixed).........	March 18 (hotbeds)...	April 15........	May 18........	Flowered in Sept.
Stock..................	" 18 " ..	" 15........	" 18........	Flowered in Aug.
Pansy..................	" 18 " ..	" 15........	" 18........	Flowered in Aug.
Snapdragon.............	April 20.............	....	....	Flowered in Sept.
Verbena................	March 18.............	April 15........	May 18........	Flowered in Sept.
Sweet Peas.............	May 19 (in open)....	May 30........	....	Flowered in Aug.
Sweet William..........	....	....	May 18........	Flowered in Aug.
Poppies................	Self sown............	May 15........	....	Flowered all summer.
Gaillardia.............	May 18 (in open)....	....	....	Flowered in Aug.
Sweet Alyssum.........	Self sown............	....	....	Flowered all summer.
Mignonette.............	"	....	....	Flowered in Aug.
Balsam.................	....	....	....	Flowered in Aug.

FRUITS.

Cherries planted May, 1913, are 4 feet in height. Apple trees planted May, 1913, are 4 feet in height. Plum trees planted May, 1913, are 4 feet in height. Strawberries, twenty-five plants, set May, 1914, yielded 2 gallons fruit. Woodland strawberries, 30 plants, set May, 1911, yielded 2 gallons fruit.

Trees from maple seed planted May, 1912, are 9 feet high, and Lilacs transplanted May 17, 1915, are 1 foot in height.

Fort Resolution.

Natural phenomena of interest to horticulturists are as follows: Snow disappeared first week of April. Rivers open May 2. May-flowers blooming May 13. Strawberries blooming May 15. Wild violets blooming May 16. Lake free of ice May 17. Wild gooseberries blooming May 19. First blooms of wild roses, June 8. Light frost June 14. First wild strawberries ripe June 16. First wild raspberries blooming June 22. First ripe raspberries August 4. First frost, September 10 and hard frost September 14.

REPORT OF REV. FATHER LELSUEM, FORT PROVIDENCE.

Notwithstanding the dryness all summer, and in spite of the hard frost of June 12 and June 15, the things sown have succeeded fairly well with the exception of turnips.

VEGETABLES.

Stratagem and Gradus peas were planted on April 23 and pricked out on June 17.

Half Long Chantenay carrot was sown on April 28, pricked out on June 7 and harvested September 17.

FORT SMITH.

The following report was sent by the Rev. Alphonse Mansoz, Fort Smith, Alta. This Sub-station is situated in latitude 60 on the Slave river. St. Bruno is 20 miles west of Fort Smith on the Salt river.

Fort Smith and St. Bruno are separated by only about 20 miles, but while the climate is very similar the soil is different, at Fort Smith it being sandy and at St. Bruno, of a black, strong character, so some plants might do better at one place than at another.

The year of 1915 was very unfavourable and very rigorous. A great drought which began almost from the time the snow disappeared continued most of the summer; hard frost, at three different times, when the condition of the vegetables led to the hope that a good harvest would occur, nearly destroyed everything. Notwithstanding severe conditions everything was ready around the beginning ot May at both Fort Smith and St. Bruno, and by the 20th of that month all the sowings were made, including beets, carrots, onions, turnips and cabbage, all of which were tested in both places. By the 30th of May all the samples had germinated and notwithstanding the drought grew very vigorously by reason of the care given them. Rochester Rose and Early Rose potatoes and a rose brought from St. Albert, Alta., were grown, all of which were very fine. Towards the middle of June frost destroyed many of the plants. However, the different varieties of turnips and carrots resisted more or less. Towards the end of July the garden had regained its first fine appearance, when a second frost more severe than the first touched it again. The carrots, onions and beets partly resisted this cold by reason of the vigour of their stalks and a satisfactory harvest was made of these vegetables. The turnips reached an average weight of five pounds. The two varieties of onions reached a good size, when a third frost which came a few days before the middle of September necessitated harvesting them and putting them to cure under more favourable conditions. The frosts were even more severe at St. Bruno than at Fort Smith and the vegetables were destroyed. Having obtained these results in such a very bad year, it is hoped that better success will be attained in a more propitious season and soil for crops has been prepared for next year.

FORT SMITH.

REPORT OF EXPERIMENTS MADE IN 1915 BY DR. WM. GREENE, "THE GATES," HUDSON HOPE, B.C.

The following report was made by Dr. Wm. Greene, "The Gates," Hudson Hope, B.C., to whom seed had been sent for trial, although he has not a regular Sub-station. Hudson Hope is situated on the Peace river in latitude 56°.

POTATOES.

Name of Variety.	Plot sown.	Plot pulled.	Description of variety.	Amount planted.	Remarks.
Burbank..............	May 20.	Sept. 20..	Oval, pink, medium...	91 pounds...	Good yield, clean, cooks dry, early.
Seed from N. Dakota name lost.	" 15..	" 25..	Oval, white, large.....	97 "	Medium yield, clean, cooks too moist, too late for this latitude.
Local Seed name lost years ago.	" 20..	" 25..	Oval, pink, medium...	90 "	Extra good yield, treated with Bichloride of mercury, scab, cooks dry.
Gold Coin............	" 23..	" 25..	Oval, white, medium.	27 "	Good yielder, hollow rot and scab, cooks dry, B.C.Gov. sample, late
Wee MacGregor.......	" 24..	" 25..	Oval, white..........	33 eyes	Fair yield, will report on seed next season.
Irish Cobbler.........	" 24..	" 25	Round, white.........	33 "	
Sutton Satisfaction....	" 24..	" 25.	Oval, pink, medium...	33 "	
Early Ohio...........	" 24..	" 25..	Oval, pink, large......	33 "	
					Burbank and Local seed recommended.
					Total yield 3,448 lb.

CORN.

Dominion Gov. Samples.	Sown.	Ready green.	Fully tasseled.	Silked.	Watery to full milk.	Ripe.	Kernels glazed.
Early Malcolm, sweet........	May 7...	Aug. 14...	July 31..	Aug. 15.	Aug. 22...	Sept. 24..	Sept. 8
White Squaw...............	" 7...	" 20..	Aug. . 5..	" 14..	" 26..	Oct. 1..	" 14
Sioux Squaw Improved......	" 7..	....	....	Did not	ripen.		

Only the exceptional season made the above possible.
I have saved seed to try next season.

Hudson Hope.

VEGETABLE Garden Record, 1915.

Vegetable.	Variety.	Put In.	Ready.	Notes.
Bean-bush	Round Red Valentine	May 15	Aug. 6	Thirty inches apart, two inches in row, up on June 5, Bloom July 11, Yield large, Quantity fair.
Bean-bush	Golden Wax	May 15	Aug. 1	Up on June 5, bloom July 8, Yield extra large, Qua-, lity extra fine, Aug. 7.
Beet	Edmond Ex. Er. Turnip	April 13	July 20	Eighteen inches apart, six inches in row. Average diameter 3⅞". Many went to seed.
	Early Model	April 19	July 12	Average diameter 3¼". Few to seed.
	Burpee Columbia	April 19	July 20	Average diameter 3". The best beet.
	Giant Half Sugar	April 24	July 20	Harvested Sept. 15, large, good shape.
	Danish Imp. Sugar	April 24		Harvested Sept. 15. Fair.
Bean	Broad Windsor	May 2		Ripened for Seed. Yield extra good.
Borecole	Burpee Siberian Dwarf	April 19		Still in use.
Brussels Sprouts	Long Island Improved		Aug. 20	Hotbed March 16, Dwarf, wonderful yield.
Cabbage	Potter Red Dutch			Hotbed March 16, fine seedlings. Matured head poor and small.
	Burpee Copenhagan Market		Aug. 1	Hotbed March 16. First head pulled 8¾ lb. Very heavy yield.
	Danish Ballhead			Solid, later than Copenhagen Market, imported seed, small core, average weight 5 lb.
Carrot	Short Scarlet or Golden Ball	April 13	July 10	Fair.
	Burpee Chantenay	April 27	July 10	Good, smooth roots, very sweet, fine grain, large for Chantenay.
	Ox Heart	April 27	July 10	Very large, sweet, smooth.
	Large Yellow Belgian	April 26		Not suited for this section, roots too long, hard clay sub-soil.
Carrot	Short White	April 26		Field 30" apart, 6" in rows. Large, good shape, over half crop root rot.
Cauliflower	Burpee Best Early		July 26	Hot bed May 20th, average diameter head 8", average weight 4½ lb. Very fine.
Celery	Golden Self-Bleaching	May 7	Aug. 21	Small, tough. Plot too dry.
Corn Salad	Large Round Leaf	May 7		Good.
Cress	Water	April 27		Seed sown in muskeg at close of season. Plants seemed hardy.
Celeraic	Turnip Rooted	April 27		Seeds did not germinate.
Endive	Burpee Giant Fringed.	April 24		Neither did well.
	Steele Briggs Green Curled	April 24		
Kohl Rabi	White Vienna	April 27	July 10	Became woody very quickly, rapid growth. Quality delicate at about 2" diameter.
Lettuce	Burpee Wayahead	April 13	June 20	Extra large solid heads, crisp.
	Cos. Dwarf White Heart	April 13		Poor.
Onion	Australian Brown	April 8		Medium size, good yield.
	Red Wethersfield	" 8		Large, yield good, average 2¾".
	Am. Prizetaker	" 8		Hot bed March 20th, cult. trial. Big necks.

HUDSON HOPE.

VEGETABLE Garden Record, 1915.—*Continued.*

Vegetable.	Variety.	Put In.	Ready.	Notes.
Onion—*Con*.	Gigantic Gibraltar	April 8		Hot bed March 20th. Large but big neck.
	Ex. Early Barletta	" 8		Some grew to 4½" diameter without turning green. Small necks.
	Yellow Globe Danvers	" 8		Medium size. Yield good.
				—
				Probably the Red Wetherfield is the best for this district, as far as my tests go.
Parsley	Ex. Curled Dwarf		June 20	Hot bed March 23rd, moved to field April 24th. Poor.
Parsnip	Offenham Market	April 7		Very hardy, large, excellent yield.
	Hollow Crown	April 7		Very hardy, large, excellent yield. Preference Offenham Market.
Pea	Dom. Gov. Sample, Am. Wonder.	April 24	July 20	
	Dom. Gov. Sample Gregory Surprise.	" 11	" 11	The sweetest.
	Blue Bantam	" 24	" 15	
	Gradus	" 24		
	Quite Content	" 24	" 20	
	Steele Briggs Western Beauty	" 24	" 17	Fine Flavour.
				All peas grew like weeds. Exceptional yield.
Radish	Burpee Scarlet Button	April 24		
	Bur. Hailstone	" 24		
	Bur. Crimson Giant Globe	" 24		
	Rapid Red	" 24		The best, will plant no other.
	White Chinese	June 26		All destroyed by root maggot.
Ruta-Bega	Burpee Golden Neckless	May 20		Good.
	Bur. Whitefleshed Neckless	" 20		The best for table use, although large. Not a bit woody.
	Bur. Breadstone	" 20		Fair.
	S. B. Co's Selected Purple Top.	" 20		Good for stock. Average 6½". If my figures are correct the yield would be about 21¼ tons per acre.
	S. B. Co's Hazard's	" 20		Fair.
Salsify	Mam. Sand. Island	April 24		Many bad shaped roots, hard sub-soil. The roots averaged 13½" x 1⅝". Very delicate and delicious flavour.
Tomato	Earliana		Ripe Aug. 18	Hot bed Mar. 16th-20th. Continued to ripen until Sept. 5th. Saved seed. Wonderful for this latitude. The plants were not protected in any way during their outdoor period.
Mangel	S. B. Co. Mam. Long Red	April 26		Poor yield, rather small.
Swiss Chard	Burpee Luculus	" 30		Poor.
Onion Sets	Red Wethersfield	" 26	July 27	Very large.
	Yellow Globe Danvers	" 26	" 27	Very large. Have saved seed from some.

HUDSON HOPE.

FLOWERS, 1915.

The flowers listed below were not given any special care, most of my time was given for "something to eat," as they express it in this district.

Asters—Beautiful, large.
Wild Cucumber—Eight feet.
Dianthus—Good; from seeded last year.
Digitalis—Fair.
Humulus—Twenty feet.
Helianthus—Some fine flowers and many varieties.
Nasturtiums—Dwarf, excellent.
Pansy—Many varieties, excellent, admired by many who did not believe they would grow in such profusion in this latitude
Phlox—Beautiful.
Poppies, Shirley—Fair.
Stocks—Poor.
Sweet Peas—A mixture of Spencer's. Beautiful, wonderful growth.
Sweet William—Seeded this year; good start.
Zinnia—Did almost as well as the catalogue describes them.
Wild Garden—Many flowers bloomed there; may have been seeds that did not germinate, but enough did their duty to make a fine showing.
Eschscholtzia—A solid round bed 8 feet diameter of the red. To me the most exquisite and delicate is the native Californian.

HERBS—1915.

Herb.	Variety.	Put in.	Ready.	Notes.
Summer Savory	*Satureia hortensis*	April 7	July 2	Fine, hardy plants.
Caraway	*Carum Carvi*	" 7		All were planted in seed bed for transplanting April 7th. The only seedlings transplanted, Summer Savory; the others did not germinate in ground, although all were tested before sowing.
Catnip	*Nepeta Cataria*	" 7		
Rosemary	*Rosmarinus officinalis*	" 7		
Lavender	*Lavandula Spica*	" 7		
Winter Savory	*Satureia montana*	" 7		
Sage	*Salvia officinalis*	" 7		

This past season was so remarkable that a report on any cultivated seed cannot be referred to as a test in this district.

The wild growth was abnormal.

The season began just right and closed as mildly.

All the cellars are full to the door, so with a shoe-string to snare rabbits the homesteaders are better fixed for the coming winter than many families in the overcrowded cities.

HUDSON HOPE.

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

REPORT

FROM

THE CEREAL DIVISION

FOR THE

Fiscal Year Ending March 31, 1916

PREPARED BY

Dominion Cerealist, Ottawa, Ont.	Chas. E. Saunders, B.A., Ph.D.
Superintendent—	
Experimental Station, Charlottetown, P.E.I.	J. A. Clark, B.S.A.
Experimental Farm, Nappan, N.S.	W. W. Baird, B.S.A.
Experimental Station, Kentville, N.S.	W. S. Blair.
Experimental Station, Fredericton, N.B.	W. W. Hubbard.
Experimental Station, Ste. Anne de la Pocatière.	Joseph Bégin.
Experimental Station, Cap Rouge, P.Q.	Gus. A. Langelier.
Experimental Farm, Brandon, Man.	W. C. McKillican, B.S.A.
Experimental Farm, Indian Head, Sask.	W. H. Gibson, B.S.A.
Experimental Station, Rosthern, Sask.	Wm. A. Munro, B.A., B.S.A.
Experimental Station, Scott, Sask.	M. J. Tinline, B.S.A. (acting).
Experimental Station, Lethbridge, Alta.	W. H. Fairfield, M.S.
Experimental Station, Lacombe, Alta.	G. H. Hutton, B.S.A.
Experimentalist, St. Bernard Mission, Grouard, Alta.	Rev. Bro. Laurent.
Experimentalist, Beaverlodge, Alta.	W. D. Albright, B.S.A.
Experimentalist, Fort Vermilion, Alta.	Robert Jones.
Experimentalist, Fort Resolution, Mackenzie Dist.	
Experimentalist, Fort Providence, Mackenzie Dist.	
Experimental Farm, Agassiz, B.C.	P. H. Moore, B.S.A.
Experimental Station, Sidney, B.C.	L. Stevenson, B.S.A., M.S.

REPORT OF THE CEREAL DIVISION.

Ottawa, March 31, 1916.

J. H. Grisdale, Esq., B. Agr.,
Director, Dominion Experimental Farms,
Ottawa.

Sir,—I have the honour to submit herewith the thirteenth annual report of the Cereal Division, in which is given a brief account of some of the more important experiments and investigations which have been carried on during the past twelve months.

The season of 1915, which was extremely favourable for the production of remarkably large crops in many parts of Canada—particularly in the centre and west—was not very satisfactory at Ottawa, so far as cereals were concerned. The wet weather, which prevailed during the harvest, lowered the quality of nearly all the grain and seriously reduced the vitality of some lots. However, most of our varieties were harvested in fair condition.

In mid-summer my milling and baking assistant, Mr. R. W. Nichols, volunteered for overseas service. His absence makes a serious break in the work of which he had charge. This, however, is unavoidable, and I quite realize the paramount importance of the task to which he is now devoting himself. The qualities which he displayed while working in my Division make me perfectly confident that he will do his full share in active service in the defence of civilization and liberty.

I wish to bear testimony to the faithful and efficient work of all the other members of the staff of my Division, especially Mr. G. Gordon Moe, my chief assistant, Miss Mary C. Carter, my stenographer, and Mr. George J. Fixter, my foreman.

Following my own report will be found the reports on cereals, written by the Superintendents of the various branch Farms and Stations.

I have the honour to be, sir,
Your obedient servant,

CHARLES E. SAUNDERS,
Dominion Cerealist.

CORRESPONDENCE.

The following figures give the number of letters received and of letters and circulars despatched during the fiscal year. Most of the correspondence is carried on during the winter months:—

Letters received direct	10,159
Letters received through other offices on this Farm	3,168
Total letters received	13,327
Letters despatched, English	3,063
Letters despatched, French	535
Printed letters and circulars despatched	11,285
Total communications despatched	14,883

The use of a large number of printed letters is found necessary in order to answer as expeditiously as possible some of the more ordinary kinds of letters of enquiry which are received.

VISITS TO BRANCH FARMS AND STATIONS.

There are now so many points at which experiments in cereals are being carried on, that it is not possible to visit them all at a favourable time without seriously neglecting the work at Ottawa, which requires my presence during parts of July and August. Last season all the Stations in British Columbia were visited towards the end of June or early in July, and the southern stations in Alberta, Saskatchewan, and Manitoba immediately afterwards. In August and early in September all the Stations east of Ottawa were visited.

CONVENTION ATTENDED.

In the middle of July I attended, as the representative of the Department of Agriculture, the joint convention of the Great Plains Co-operative Experiment Association and the Great Plains Section of the American Society of Agronomy which was held at Mandan, North Dakota, in the buildings of the federal experiment station recently established there.

The series of meetings proved to be very interesting and valuable to those who are concerned with agricultural problems on prairie lands. I addressed the convention on the subject of "Varieties of Spring Wheat suitable for the Prairie Provinces of Canada."

MARQUIS WHEAT.

It is a pleasure to record the fact that for five years in succession Marquis wheat has won the highest award in the great international competitions. The winning exhibit this past season at the International Dry-farming Congress in Denver, Colorado, was sent by Mr. Seager Wheeler, of Rosthern, Sask. This is the third time, in five years, that Mr. Wheeler has gained the highest prize.

OTTAWA.

NEW BUILDING FOR THE CEREAL DIVISION.

The building on the Central Experimental Farm, which for the last few years has been used by the Cereal Division and the Division of Forage Crops, was unfortunately destroyed by fire in the early morning of July 24 last. A considerable amount of valuable seed of standard and new varieties of cereals was burned, but the harvest was just beginning and there was therefore no loss of grain of the current season, except a few bundles of selected plants of early-ripening, cross-bred barleys. There was, however, a serious loss of oats, emmers, spelts, and beans, owing to the fact that it was impossible to sow any plots of these last spring. A system of filing small samples of seed in another building—partly as a safeguard in case of fire—saved the varieties from being totally lost; but the regular experimental plots cannot be reintroduced for two or three years on account of the lack of seed.

Immediately after the fire, provision was made for carrying on the work of the Division in temporary quarters; and in a short time work was begun on the plans for a new building.

This was designed so that increased space would be available for the work of this Division and for the Division of Agrostology, to which only two rooms in the old building had been assigned. The former structure, erected in 1911, was of a plain design 40 by 70 feet. The new building is 40 by 90 feet, of pleasing and harmonious design, made with a balloon frame and square pitched roof. The exterior, finished with plain lumber and battens, with shingles on the sides of the upper story, presents an attractive appearance, while the interior finishings of matched wood—though inexpensive and suitable for the uses to which the rooms are to be put—are pleasing and satisfactory.

No claim of special novelty in plan or design is made, but the building is very well constructed to enable the work of the Divisions concerned to be carried on to good advantage. Efficiency and facility of work were the main objects in view. The rooms are convenient and sufficiently large, and the building is well provided with electric light and power.

A commodious basement extends the whole length of the structure. The space not required for furnaces, coal, etc., will be used partly for the housing of implements. As the building is situated on the side of a hill, the rear entrance leads directly into the basement, while the entrances at the side and front lead on to the main floor. On this floor a space 40 by 50 feet has been provided for the threshing of plots and for the temporary storage of unthreshed material. In the winter this space is used for the storage of the large quantities of seed grain which are required for distribution purposes. The remainder of this flat consists of four rooms and a hall. One of these rooms will be used by the Division of Agrostology. The others comprise a seed selection and bagging room 16 by 24 feet, a fanning-mill room 16 by 16 feet, and a room 16 by 20 feet, which will contain the large, stationary, grain-cleaning machinery, and will be provided with power from the main shaft in the threshing room.

The second floor contains a writing room, a baking room, a milling room, two rooms for seed and plant inspection and selection, a granary for the storage of the grain from the test plots and breeding plots, and three other rooms used by the Division of Agrostology. These rooms are lighted throughout by large dormer windows.

At the time of writing this report, most of the mills and other machinery lost, have not yet been replaced, but arrangements are being made to put in the new machinery as required.

It is a pleasure to record the fact that the erection of the new building proceeded rapidly, construction starting on the first of December and some of the rooms being ready for use early in March.

Ottawa.

DISTRIBUTION OF SAMPLES OF SEED GRAIN AND POTATOES.

During the past winter the usual annual free distribution of samples of seed grain and potatoes has been carried on. The grain distributed was obtained from the Experimental Farms at Indian Head, Sask., Brandon, Man., Ottawa, Ont., Cap Rouge, Que., and Ste. Anne de la Pocatière, Que. The quality and appearance of most of the lots of seed were very good, though a few of them showed slight ill effects from wet weather.

As our usual, efficient grain-cleaning machines were not available this winter, the grain was cleaned and graded entirely by fanning mills. A great deal of it was also hand-picked.

It is intended that all grain sent out shall be above fair criticism. Occasionally however it is necessary to distribute seed which is not so plump and bright as we could wish, when no other seed of equal purity and of equally good pedigree is obtainable. If we are obliged to sacrifice either intrinsic quality or appearance, we invariably sacrifice the latter.

A smaller number than usual of samples has been distributed this season. Owing to the difficulties produced by the destruction of the cereal building, it was not possible to accept as many applications as in other years. The time-limit for the acceptance of requests was therefore enforced more rigidly than usual.

Farmers who desire to secure a sample from this free distribution should apply in November or December, and, to avoid trouble and delay, must give a clear statement of their needs, so that a suitable variety may be sent without further correspondence. Applicants for potatoes from other provinces than Ontario and Quebec are supplied from the branch Experimental Farms.

The following tables show the number of samples distributed from Ottawa:—

DISTRIBUTION Classified by Varieties.

Name of Variety.	Number of Packages.	Name of Variety.	Number of Packages
Oats—		Barley (six-row)—	
Banner	603	Manchurian	597
Victory	274	O. C. A. No. 21	13
Ligowo	96		
Daubeney	85		610
	1058	Peas—	
		Arthur	885
Spring Wheat—		Potatoes—	
Marquis	734	Green Mountain	816
Prelude	153	Irish Cobbler	389
Huron	144		
Red Fife	70		1205
Pioneer	21		
	1122		

OTTAWA.

Distribution Classified by Provinces.

—	Prince Edward Island.	Nova Scotia.	New Brunswick.	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	Total.
Oats	12	50	23	502	155	60	122	99	35	1058
Barley	1	30	10	239	58	63	80	85	44	610
Wheat	11	76	24	324	96	76	223	235	57	1122
Peas	2	28	22	351	146	56	111	109	60	885
Potatoes	....	....	....	740	465	....	....	....	....	1205
Total	26	184	79	2156	920	255	536	528	196	4880

SEED GRAIN FOR SALE.

The Dominion Cerealist will be glad to furnish information, as far as possible, to intending purchasers of seed grain, as to the nearest sources for good seed. Farmers and seedsmen, from any part of Canada, are advised to send in their names to the Dominion Cerealist, with statements of the quantities of good seed which they have for sale. Small samples should also be sent when possible. It is very seldom that any seed grain is purchased for the Cereal Division; but we wish to be in a position to put buyers in touch with sellers, to their mutual advantage.

Most of the branch Experimental Farms have seed grain for sale, generally in quite limited quantities. There is also occasionally a small surplus of seed at Ottawa, after the free distribution has been finished, which is available for sale, usually in two-bushel lots.

Ottawa.

VITALITY TESTS OF SEED GRAIN.

Vitality tests of seed grain grown in 1915 at the Central Experimental Farm and at the branch Experimental Farms gave the following results:—

CENTRAL EXPERIMENTAL FARM, OTTAWA.

Kind of Seed.	Number of Tests.	Highest Percentage.	Lowest Percentage.	Average Vitality.
Spring Wheat	192	100	70	96·0
Barley	228	100	11	82·1
Peas	63	100	38	80·7
Flax	31	97	38	77·9
BRANDON, MAN.				
Spring Wheat	16	100	94	97·6
Barley	38	100	64	93·5
Oats	18	100	89	96·5
Peas	9	68	42	50·0
Flax	9	100	81	93·7
CAP ROUGE, QUE.				
Spring Wheat	8	99	84	95·3
Barley	5	100	99	99·8
Oats	6	100	97	98·5
Peas	5	75	32	62·8
Flax	2	100	78	89·0
CHARLOTTETOWN, P.E.I.				
Spring Wheat	15	100	53	80·8
Barley	18	100	85	95·5
Oats	19	100	90	97·1
Peas	4	73	44	64·0
FORT VERMILION, ALBERTA.				
Spring Wheat	11	100	88	97·6
Barley	7	100	98	99·7
Oats	5	100	93	98·0
Peas	2	49	47	48·0
FREDERICTON, N.B.				
Spring Wheat	5	82	47	69·4
Barley	5	98	63	84·8
Oats	5	100	90	94·2
INDIAN HEAD, SASK.				
Spring Wheat	27	100	94	98·3
Barley	24	100	88	96·8
Oats	17	100	89	96·7
Rye	1	....	....	87·0
Peas	9	71	46	51·0
Flax	3	100	95	96·6

VITALITY Tests of Seed Grains.—*Concluded.*

KENTVILLE, N.S.

Kind of Seed.	Number of Tests.	Highest Percentage.	Lowest Percentage.	Average Vitality.
Spring Wheat	2	91	59	75·0
Barley	2	94	89	91·5
Oats	4	100	88	94·0
Peas	2	81	62	71·5

LACOMBE, ALBERTA.

Kind of Seed.	Number of Tests.	Highest Percentage.	Lowest Percentage.	Average Vitality.
Spring Wheat	15	92	74	80·8
Barley	15	96	68	88·4
Oats	16	96	60	85·5
Rye	1	....	....	80·0
Peas	6	63	14	34·5
Flax	2	36	35	35·5

ROSTHERN, SASK.

Kind of Seed.	Number of Tests.	Highest Percentage.	Lowest Percentage.	Average Vitality.
Spring Wheat	14	100	95	98·0
Barley	19	100	91	98·2
Oats	11	100	86	94·3
Peas	6	97	70	81·3

STE. ANNE DE LA POCATIÈRE, QUE.

Kind of Seed.	Number of Tests.	Highest Percentage.	Lowest Percentage.	Average Vitality.
Spring Wheat	2	99	97	98·0
Barley	2	98	92	95·0
Oats	2	99	95	97·0
Peas	1	....	....	96·0

SCOTT, SASK.

Kind of Seed.	Number of Tests.	Highest Percentage.	Lowest Percentage.	Average Vitality.
Spring Wheat	12	100	92	95·6
Barley	9	98	91	95·5
Oats	12	99	79	90·9
Rye	1	....	....	77·0
Peas	6	100	62	83·1
Flax	3	72	58	67·3

MILLING AND BAKING RESEARCHES.

The enlistment of my milling and baking assistant, Mr. R. W. Nichols, for overseas service, has made necessary the suspension of all the researches which he was carrying on. The destruction by fire of the flour mill has stopped the milling work altogether for the present. A few baking tests were made during the past winter, but they were not sufficiently numerous to give any results for publication.

This important branch of the work of the Cereal Division will be resumed as soon as possible.

OTTAWA.

CENTRAL EXPERIMENTAL FARM, OTTAWA, ONT.

The following pages of this section of the report deal with the work in cereals as carried on at Ottawa under the immediate supervision of the Dominion Cerealist.

THE SEASON.

Favourable weather and the early disappearance of the snow permitted the seeding of the first wheat on the 16th of April. Sowing proceeded steadily from the 24th onward. Cool weather prevailed during May, accompanied by drought during the latter part of the month and early in June. As a consequence cereal growth was somewhat retarded. However, warm rains from about the 12th of June onward compensated somewhat for the previous lack of moisture; growth was hastened, and by the 5th of July heavy, rank, prolific-looking straw gave promise of an abundant crop. Unfortunately, high winds on this date bore down many of the multiplying strips and test plots. Ripening proceeded slowly, the earliest maturing wheats and barleys being cut on the 25th of July. From this time forward harvesting operations proceeded under extreme difficulties. Heavy rains and a humid atmosphere prevented proper drying, even when temperatures were rather high; and some of the grain sprouted in the stooks, though covers were used extensively. Frequent opening and turning of the stooks and occasional opening of the sheaves materially reduced the yields of the plots, while the quality of the grain was seriously affected by the early lodging and heavy rains. A few days of fine weather in the latter part of August aided the conclusion of harvesting. These unfavourable conditions prevailed not only at Ottawa but were quite general in this province and in parts of Quebec. The losses of grain of many farmers were heavy.

CROSSING AND SELECTION OF CEREALS, ETC.

No new crosses are being made at present, as the amount of material now on hand is much too great for the land and staff allotted to the Cereal Division.

Among the most interesting groups of crosses which are being fixed may be mentioned those between Prelude wheat and other varieties, Prelude × Marquis being perhaps the most interesting of these.

Several beardless sorts from Prelude wheat were isolated a few years ago and some of them were tested in the regular plots for the first time last season. None will be introduced until we are sure that no valuable characteristic of Prelude has been lost in them.

A large quantity of unfixed material of great scientific interest, and displaying some new characters, has been produced from crosses between Arlington Awnless and various other barleys. In flax, some crosses made several years ago have given hundreds of new sorts, some of which are now almost fixed. The crosses were made, and the selections are being carried on, with a view to the production of varieties useful for fibre as well as for seed.

PLOTS OF CEREALS, ETC., AT OTTAWA.

In 1915 there were sown at Ottawa 694 small plots of cross-bred varieties not yet fixed in character, and 447 plots (chiefly small) of new varieties and selections which are now true to type and are being increased for test on a larger scale. There were also twelve small plots of flax for fibre.

The regular test plots of grain, for the comparison of varieties, are one-sixtieth of an acre each. The number of plots of this size last season was as follows: Spring wheat, 206; barley, 260; field peas, 61; and flax, 29; making a total of 556 plots, and representing about 500 varieties and selected strains.

The total number of plots of all sizes was 1,709.

Owing to the shortage of land for the Cereal Division, the regular test plots of oats, rye, emmer, spelt, and beans had to be omitted.

EXPLANATION OF THE TABLES.

A careful study of the effects of irregularities in the soil of our fields, and the effects of differences in the dates of the sowing of varieties which are being compared, has shown clearly that the figures actually obtained for yield, days maturing, etc., are in many cases misleading—though quite accurate. Hence for the proper comparison of varieties it is essential to introduce various corrections. These are rather too numerous and complicated to be easily explained. It appears advisable therefore to present in the tables, the facts as observed.

The character of the straw is indicated by marks on a scale of ten points according to the proportion of the plot standing erect at harvest time. A variety standing quite erect receives a mark of ten, while one completely lodged is marked 0.

As a rule, only named varieties are mentioned in the tables. Most of the varieties under test are new cross-bred sorts produced by the Dominion Cerealist and recorded for the present by means of numbers and letters. As soon as the value of these sorts has been determined. names will be given to such of them as possess sufficient merit to warrant their introduction to the public.

SPRING WHEAT.

One hundred and ninety-two varieties and selected strains of spring wheat were sown in the regular one-sixtieth acre trial plots at Ottawa. The wheat was sown from the 24th to the 29th of April, the seed being used at the rate of about one and one-half bushels to the acre. Cutting commenced on the 28th of July, a few days later than usual. Prelude was the first variety cut.

Owing to the unfavourable nature of the season, very irregular results were obtained, the extreme yields being 63·5 bushels and 9 bushels per acre.

Those sorts which have a letter or an Ottawa number after the name are new varieties or selections produced by the Dominion Cerealist.

Spring Wheat.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days maturing	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inches		Inches.	Lb.	Bu.	lb.	Lb.
1	Bobs, reselected	April 24	Aug. 2	100	46	10	3·5	3,810	63	30	64·8
2	Early Red Fife, Ottawa 16	" 24	" 9	107	48	6	3·7	2,880	48	..	62·2
3	Goose	" 24	" 5	103	46	7	2·5	2,850	47	30	65·0
4	Early Russian, Ottawa 40	" 24	" 5	103	46	0	3·5	2,820	47	..	62·0
5	Chelsea, Ottawa 10	" 24	" 4	102	50	1	4·2	2,760	46	..	58·5
6	White Russian C	" 24	" 9	107	48	4	4·0	2,760	46	..	61·0
7	White Russian D	" 24	" 9	107	48	7	4·0	2,700	45	..	58·9
8	Bishop, Ottawa 8	" 24	" 2	100	42	4	3·2	2,670	44	30	60·5
9	Yellow Cross Beardless A	" 24	" 5	103	50	7	3·5	2,550	42	30	61·6
10	White Fife, Ottawa 11	" 24	" 9	107	48	5	4·0	2,520	42	..	61·6
11	Red Fern C	" 24	" 6	104	50	9	5·0	2,130	35	30	61·1
12	Yellow Cross Beardless B	" 24	" 5	103	50	5	3·5	2,040	34	..	59·7
13	Red Fife, Ottawa 17	" 24	" 9	107	48	6	4·0	1,980	33	..	60·4
14	Huron, Ottawa 3	" 28	" 10	104	49	7	5·0	1,890	31	30	57·5
15	Hungarian White B	" 24	" 9	107	48	10	4·0	1,770	29	30	61·0
16	Huguenot A	" 24	" 5	103	46	10	2·5	1,740	29	..	59·3
17	Huguenot B	" 24	" 5	103	46	10	2·5	1,260	21	..	57·8
18	Pioneer, Ottawa 195	" 24	" 2	100	44	10	4·0	1,260	21	..	63·0
19	Onega A	" 24	" 1	99	40	10	3·2	1,110	18	30	56·0
20	Persian Red	" 24	" 1	99	42	4	3·0	930	15	30	61·8
21	Hungarian White D	" 24	" 9	107	48	8	4·0	870	14	30	60·3
22	Kubanka B	" 24	" 17	115	42	5	2·5	810	13	30	59·0
23	Marquis, Ottawa 15	" 24	" 8	106	40	8	4·5	810	13	30	56·7
24	Prelude, Ottawa 135	" 24	July 28	95	36	10	2·5	780	13	..	64·4
25	Kubanka A	" 24	Aug. 17	115	42	5	2·5	690	11	30	60·5

RECOMMENDED VARIETIES OF SPRING WHEAT.

For Ontario and Quebec.—Huron, very productive, early ripening, bearded, giving flour of fair baking strength. Marquis and Early Red Fife, early ripening, beardless, giving flour of very high baking strength. Red Fife and White Fife rather late in ripening, beardless, giving flour of very high strength. The extremely early ripening variety Prelude will be useful in some northern localities. It is an excellent variety but should not be expected to give a very large yield. It is not adapted for dry districts.

For the Maritime Provinces.—Red Fife and White Fife are very good. If early sorts are required, Huron and Marquis are recommended. White Russian is popular. It gives a large yield, but is of poor quality for bread-making.

Ottawa.

For Manitoba and Saskatchewan.—Marquis is the best variety for most districts. Red Fife is excellent for localities where there is no danger of early frosts. For districts where extreme earliness is required and where there is sufficient rainfall to produce a good length of straw, the new variety Prelude is highly recommended. Pioneer, another new and very early ripening sort, should be given a trial if the conditions are too dry for Prelude.

For Alberta.—Red Fife is perhaps the best sort for some of the dry areas towards the south, but, wherever there is sufficient rainfall, Marquis should be tried. If early-maturing varieties with longer straw than Marquis are essential, Huron or Early Red Fife should be tested. Pioneer, a new variety recently introduced by the Dominion Cerealist, ripens earlier than any of the above-mentioned sorts, and has given good results under dry conditions. It is bearded and produces straw which is usually of fair length. It is not adapted to moist districts. For all localities where the tendency is towards the production of excessively long straw, and where a very early-ripening wheat is required, Prelude is unquestionably the best variety known.

For British Columbia.—Huron is one of the best varieties. Red Fife and Marquis may not generally give quite such large crops but they are more popular for bread-making. Prelude or Pioneer may be useful in a few localities where extreme earliness is essential.

EMMER AND SPELT.

Owing to the shortage of land for the use of the Cereal Division, the plots of emmer and spelt could not be sown.

Common Emmer—often incorrectly called " Speltz "—is one of the best varieties. However, for most districts, under ordinary conditions of climate and farming, it has not proved as valuable as the more common cereals, and its use is therefore not advised.

OATS.

Owing to shortage of land the regular variety tests of oats could not be made last season.

RECOMMENDED VARIETIES OF OATS.

Among the most productive varieties of white oats, Banner is especially recommended. Ligowo is somewhat earlier in ripening, but does not generally give quite so large a yield as Banner. Two new sorts, Victory (also called Seger and Conqueror) and Ontario Agricultural College No. 72 (a selected strain of Siberian) are now attracting considerable attention. They are excellent, productive kinds, but the No. 72 is rather late in ripening. Gold Rain is a very prolific yellow oat. Black oats are not recommended, but Pioneer and Excelsior may be mentioned as two of the best.

Farmers who require an extremely early-ripening variety should try Eighty Day, Orloff or Sixty Day. The name Sixty Day is misleading, as this oat is not earlier than the other two. Daubeney is another similar sort, almost as early as Eighty Day, and generally producing a somewhat larger crop, longer straw and larger kernels. All these oats are, however, small in kernel; and they seldom yield as well as the later sorts.

BARLEY.

As there seems to be no sufficient reason for separating barleys into two great groups, according to whether the heads are of the 2-row type or not, it has been decided, in future, to report on all the varieties together. As a matter of fact the old classification is very arbitrary and unsatisfactory.

Two hundred and twenty-eight varieties of barley were sown in the regular plots last season. The grain was sown at the rate of about two bushels per acre, when the seeds were large, and one and a half bushels when the seeds were very small. The sowing of the plots was begun on the 30th of April and finished on the 11th of May. This extended (but unavoidable) period of seeding, renders very difficult the interpretation of the results obtained.

The highest yield was at the rate of 75 bushels 30 pounds per acre, and the lowest 21 bushels 42 pounds.

Those sorts which have a letter or an Ottawa number after the name are new varieties or selections produced by the Dominion Cerealist.

BARLEY.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.	Weight per measured bushel after cleaning
					Inches		Lb.	Bu. lb.	Lb.	Inches.
1	Gold (2)	April 30	Aug. 5..	97	40	0	3·2	3,630	75 30	52·1
2	Finnish 6 row	“ 30	“ 2..	94	35	10	2·2	3,540	73 36	44·9
3	Duckbill C (2)	“ 30	“ 9..	101	44	4	3·7	3,300	68 36	50·3
4	Swan's Neck (2)	May 3	“ 2..	91	48	7	4·0	3,240	67 24	50·8
5	Canadian Thorpe D (2)	April 30	“ 8..	100	46	2	3·5	3,180	66 12	52·0
6	O. A. C. N° 21 (6)	May 3	July 31..	89	46	10	3·5	3,150	65 30	46·5
7	Taganrog A. (6)	“ 4	Aug. 1	89	44	4	3·5	3,150	65 30	46·5
8	Finnish 2 row No. 1	April 30	“ 6..	98	47	9	3·5	3,120	65 ..	52·3
9	Goldthorpe B (2)	“ 30	“ 9 .	101	44	7	3·5	3,060	63 36	52·1
10	Swedish Chevalier (2)	May 3	“ 9 .	98	44	5	5·0	3,030	63 6	52·0
11	Manchurian, Ottawa 50 (6)	“ 7	“ 2..	87	41	8	4·0	2,970	61 42	45·5
12	Primus (2)	“ 3	“ 7..	96	47	4	3·5	2,940	61 12	51·8
13	Early Indian (6)	April 30	July 25..	86	31	0	2·2	2,910	60 30	45·1
14	Manchurian G (6)	May 3	“ 31..	89	45	10	4·0	2,910	60 30	45·8
15	Early Chevalier, Ottawa 51 (2)	April 0	Aug. 2..	94	52	3	4·0	2,880	60 ..	50·0
16	Gordon A. (2)	“ 30	“ 4..	96	54	5	3·5	2,880	60 ..	51·7
17	Goldthorpe C (2)	“ 30	“ 9..	101	44	10	3·5	2,880	60 ..	52·0
18	Duckbill B (2)	April 30	“ 6..	98	42	10	3·7	2,850	59 18	52·0
19	Manchurian H. (6)	May 3	July 31..	89	45	10	4·0	2,850	59 18	46·2
20	Yale D. (6)	“ 4	Aug. 2..	90	48	6	2·7	2,850	59 18	48·0
21	Triumph (6)	“ 4	“ 8..	96	45	9	3·5	2,820	58 36	45·6
22	Invincible (2)	“ 3	“ 9..	98	47	2	4·0	2,790	58 6	51·3
23	Canadian Thorpe E (2)	April 30	“ 8..	100	46	6	3·5	2,760	57 24	51·8
24	Escourgeon (6)	“ 0	“ 9..	101	46	2	3·5	2,730	56 42	49·0
25	Standwell (2)	May 3	“ 1..	90	48	8	4·5	2,730	56 42	51·5
26	Goldthorpe A. (2)	April 30	“ 9..	101	44	1	3·5	2,700	56 12	50·1
27	Star (6)	May 3	“ 6..	95	34	10	2·0	2,670	55 30	45·7
28	Yale G. (6)	“ 4	“ 1..	89	48	7	2·7	2,670	55 30	46·8
29	French Chevalier (2)	April 30	“ 7..	99	50	5	4·5	2,640	55 ..	51·5
30	Goldthorpe D (2)	“ 30	“ 9..	101	44	5	3·5	2,640	55 ..	51·7
31	Odessa D. (6)	May 3	“ 1..	90	50	4	4·0	2,640	55 ..	45·3
32	Gordon E. (2)	“ 3	“ 2 .	91	50	7	3·5	2,610	54 18	51·7
33	Odessa F. (6)	“ 3	“ 1..	90	50	5	4·0	2,580	53 36	44·7
34	Nugent C. (6)	“ 3	“ 1..	90	48	5	4·0	2,520	52 24	46·1
35	Nugent K. (6)	“ 3	“ 1..	90	44	5	4·0	2,490	51 42	46·0
36	Yale C. (6)	“ 4	“ 2..	90	48	4	2·7	2,490	51 42	48·5
37	Yale F. (6)	“ 4	“ 2.	90	46	8	2·7	2,490	51 42	46·5
38	Yale H. (6)	“ 4	“ 1..	89	48	10	2·7	2,490	51 42	49·0
39	Nugent A. (6)	“ 3	“ 1..	90	48	9	4·0	2,460	51 12	44·0
40	Odessa C. (6)	“ 3	“ 1..	90	50	8	4·0	2,460	51 12	46·0
41	Stella A. (6)	“ 3	“ 1..	90	50	4	4·0	2,460	51 12	46·4
42	Nugent D. (6)	“ 3	“ 1..	90	48	10	4·0	2,430	50 30	47·1
43	Yale E. (6)	“ 4	“ 2..	90	46	5	2·7	2,430	50 30	46·8
44	Stella G. (6)	“ 3	“ 1..	90	50	9	4·0	2,400	50 ..	46·4
45	Clifford (2)	April 30	“ 2..	94	54	6	4·2	2,370	49 18	50·7
46	Nugent E. (6)	May 3	“ 1..	90	42	10	4·0	2,370	49 18	46·3
47	Success B. (6)	“ 3	July 29..	87	47	8	4·0	2,340	48 36	44·3
48	Kutais (2)	“ 3	Aug. 2..	91	48	4	4·5	2,280	47 24	51·0
49	Nugent B. (6)	“ 3	“ 1..	90	43	10	4·0	2,280	47 24	46·3

BARLEY—Tests of Varieties.—*Concluded.*

Number	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inch's		Inches.	Lb.	Bu.	lb.	Lb.
50	Guymalaye (6)...............	May 3	July 31..	89	36	10	3·0	2,250	46	42	62·8
51	Nugent L. (6)...............	“ 3	Aug. 1..	90	44	10	4·0	2,250	46	42	45·0
52	Stella C. (6)...............	“ 3	“ 1..	90	50	6	4·0	2,250	46	42	46·1
53	Oderbruch (6)...............	“ 3	“ 1..	90	46	10	4·2	2,220	46	12	47·5
54	Black Two-row...............	April 30	“ 9..	101	38	5	4·0	2,190	45	30	49·4
55	Nugent H. (6)...............	May 3	“ 1..	90	40	8	4·0	2,190	45	30	44·0
56	Gordon B. (2)...............	April 30	“ 2..	94	54	8	3·5	2,160	45	..	46·8
57	Caucasian Hulless (6)........	“ 30	July 31..	92	30	8	4·0	2,100	43	36	62·0
58	Yale A. (6)...............	May 4	Aug. 4..	92	48	10	2·7	2,100	43	36	48·4
59	Nugent F. (6)...............	“ 3	“ 1..	90	40	10	4·0	2,070	43	6	48·1
60	Yale B. (6)...............	“ 4	“ 4..	92	48	9	2·7	2,040	42	24	49·1
61	Gordon D. (2)...............	April 30	“ 2..	94	50	10	3·5	2,010	41	42	50·2
62	Binder(2)...............	“ 30	“ 2..	94	34	8	4·5	1,950	40	30	50·7
63	Swedish 6-row TypeI..	May 3	“ 8..	97	36	8	4·0	1,950	40	30	45·0
64	Blue Short Head A. (6)......	April 30	“ 9..	101	26	10	2·0	1,920	40	..	43·0
65	Jarvis (2)...............	May 3	“ 2..	91	50	9	5·5	1,800	37	24	50·5
66	Blue Short Head C. (6)......	April 30	“ 9..	101	26	10	2·0	1,770	36	42	43·2
67	Nugent G. (6)...............	May 3	“ 1..	90	40	10	4·0	1,770	36	42	47·1
68	Swedish 6-row Type II.......	“ 4	July 31..	88	33	10	2·0	1,650	34	18	43·8
69	Albert B (6)...............	April 30	“ 29..	90	44	10	2·7	1,590	33	6	48·0
70	Albert A. (6)...............	“ 30	“ 29..	90	44	10	2·7	1,500	31	12	47·5
71	Beaver E. (2)...............	“ 30	Aug. 1..	93	50	10	5·0	1,470	30	30	49·4
72	Beaver B. (2)...............	“ 30	“ 1..	93	50	10	5·0	1,230	25	36	47·3
73	Beaver D. (2)...............	“ 30	“ 1..	93	50	10	5·0	1,200	25	..	47·0
74	Black Japan (6)...............	“ 30	“ 5..	97	32	8	2·2	1,080	22	24	45·0

RECOMMENDED VARIETIES OF BARLEY.

Among the most productive six-row barleys are Manchurian, O.A.C. No. 21, and Odessa. Among the prolific two-row sorts may be mentioned Gold (a new Swedish variety with rather unsatisfactory straw), Duckbill, and some of the strains of Chevalier. Early Chevalier is an extra early strain, but is not remarkably productive.

The hooded (or 'beardless') types of barley at present obtainable in commerce are not very satisfactory. Success and Champion are two of the best kinds. They are both very early in ripening, but they generally give a rather small yield. These are six-row barleys.

The common sorts of hulless barley are Hulless White (a hooded sort), and Hulless Black (bearded). These are not specially productive and have rather poor straw as a rule.

SPRING RYE.

Owing to the shortage of land, the usual plots of spring rye had to be omitted.

OTTAWA.

FIELD PEAS.

Fifty-one varieties of field peas were sown in the regular test plots on May 12. The seed was used at the rate of about two bushels per acre in the case of small peas, and three bushels when the peas were large. The very wet weather in August materially lowered both the yield and quality of the seed harvested. The highest yield obtained was at the rate of 50 bushels to the acre, and the lowest yield was 20·5 bushels.

Only the named sorts are mentioned in the table.

PEAS.—Test of Varieties.

Number	Name of Variety.	Size of Pea.	Date of Sowing.	Date of Ripening.	Number of days maturing	Average length of Straw.	Average length of Pod.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
						Inches.	Inches.	Lb.	Bu.	lb.	Lb.
1	Solo	Large	May 12	Aug. 17	97	72	2·5	2,520	42	..	61·0
2	Arthur, Ottawa 18	Medium	" 12	" 17	97	53	2·2	2,497	41	37	62·5
3	Mackay	Large	" 12	" 25	105	80	2·2	2,400	40	..	63·8
4	Prince	"	" 12	" 25	105	72	2·2	2,400	40	..	64·0
5	Picton	Medium	" 12	" 21	101	74	2·2	2,130	35	30	64·1
6	Prussian Blue	"	" 12	" 21	101	68	2·0	2,040	34		63·8
7	White Marrowfat	Large	" 12	" 26	106	74	2·5	1,890	31	30	63·8
8	English Grey	"	" 12	" 17	97	48	2·5	1,770	29	30	60·2
9	Golden Vine	Small	" 12	" 15	95	65	2·2	1,470	24	30	63·8
10	Chancellor	"	" 12	" 14	94	54	2·0	1,260	21	..	63·2

RECOMMENDED VARIETIES OF FIELD PEAS.

Among the best sorts which are available to the public may be mentioned Arthur, Golden Vine, and Prussian Blue. Arthur is a yellow pea, of medium or above medium size, and is a little earlier in ripening than most other sorts. Golden Vine is a small yellow pea.

FIELD BEANS.

No regular plots of beans could be sown, last season, owing to the lack of suitable land.

OTTAWA.

FLAX.

Thirty-one selected strains of flax were grown in the regular test plots. The seed was sown on May 14, at the rate of about 60 pounds per acre. The yield would have been satisfactory had the crop not been seriously injured by the wet weather in August.

All the strains under test were selected at Ottawa.

The strains named Foremost are selections out of the popular western variety, Premost.

FLAX.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.		Date of Ripening.		Number of days maturing.	Average length of Plants.	Yield of seed per acre.	Yield of seed per acre.		Weight per measured bush. after cleaning.
							Inches.	Lb.	Bush.	Lb.	Lb.
1	La Plata B............	May	14	Aug.	12	90	24	1,440	25	40	52·7
2	La Plata C............	"	14	"	12	90	28	1,350	24	6	54·0
3	Foremost C............	"	14	"	10	88	28	1,260	22	28	55·2
4	La Plata A............	"	14	"	12	90	28	1,200	21	24	51·4
5	Foremost A............	"	14	"	10	88	36	1,170	20	50	53·0
6	Common D............	"	14	"	3	81	26	1,140	20	20	54·3
7	White Flowering B......	"	14	"	8	86	30	1,110	19	46	54·0
8	Foremost B............	"	14	"	10	88	28	1,080	19	16	54·0
9	Novelty............	"	14	"	7	85	28	1,080	19	16	52·8
10	White D 3............	"	14	"	3	81	18	1,050	18	42	53·1
11	Common C............	"	14	"	10	88	30	1,020	18	12	54·2
12	White A............	"	14	"	9	87	24	1,020	18	12	54·5
13	White E 3............	"	14	"	2	80	26	1,020	18	12	51·9
14	White D 1............	"	14	"	3	81	18	990	17	38	53·2
15	White B............	"	14	"	2	80	24	960	17	8	55·3
16	White C............	"	14	"	2	80	22	960	17	8	53·5
17	White E 1 A............	"	14	"	3	81	18	960	17	8	53·5
18	White Flowering A.......	"	14	"	3	81	24	900	16	4	53·6
19	Common A............	"	14	"	3	81	27	870	15	30	52·8
20	Yellow Seed B............	"	14	"	11	89	36	870	15	30	54·0
21	White E 1 B............	"	14	"	3	81	18	840	15	..	52·0
22	Common B............	"	14	"	8	86	30	810	14	26	54·8
23	White E 2............	"	14	"	1	79	20	810	14	26	52·5
24	Yellow Seed C............	"	14	"	11	89	36	780	13	52	53·0
25	Yellow Seed A............	"	14	"	11	89	36	750	13	22	53·9
26	Russian B............	"	14	"	3	81	36	570	10	10	54·3
27	Riga B............	"	14	"	3	81	30	540	9	36	54·2
28	Longstem............	"	14	"	10	88	36	480	8	32	53·1
29	Riga C............	"	14	"	3	81	30	450	8	2	54·8
30	Russian A............	"	14	"	3	81	30	450	8	2	55·1
31	Riga A............	"	14	"	9	87	30	300	5	20	52·2

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

J. A. CLARK, B.S.A., SUPERINTENDENT.

SEASONAL NOTES.

The winter of 1914-15 was unusually mild. Two brief cold waves gave zero weather at Christmas and around the first of February. After each cold spell the frost came entirely out of the ground during the mild weather that followed. Heavy falls of snow, in March, that remained a considerable time, gave excellent protection to the fields and as it melted soaked slowly into the ground. Large bodies of ice along the coast kept the season backward. May was cold and wet. Seeding on dry land commenced on May 15. No June frosts occurred at this Station. June and July were good growing months, beneficial showers falling at frequent intervals. The harvest weather during August and September was very favourable and the cereals were saved in good condition. The first grain was cut on August 21.

CEREAL AREA.

A four-year rotation known as " F " was laid off for cereals in 1914. It is planned to give a maximum area to cereals and yet maintain the fertility of the land. The rotation is as follows:—

First year.—Hoed crop. Test of roots, potatoes, corn and peas.

Second year.—Grain. Plots of wheat and barley. Seeded down with 10 pounds of red clover, 2 pounds of alsike, and 5 pounds of timothy per acre.

Third year.—Clover hay; 8 tons of manure per acre are applied after the hay is cut and ploughed under in the early autumn.

Fourth year.—Grain. Oat plots, seeded down with 8 pounds of red clover and 2 pounds of alsike.

UNIFORM TEST PLOTS OF CEREALS.

The season was late and considered unfavourable except for the dry land, the cereal crops of the province generally being below the average yield. The uniform test plots were sown in duplicate, as far as the land permitted, on one-sixtieth acre plots on the following dates: Spring wheat, May 17; oats, May 18; peas, May 22; and barley, June 2.

The wheat plots were free from stinking smut. The loose smut of wheat was hand-picked. The amount was greatly lessened by careful work the previous year. A considerable amount of Fusarium and Cladisporium was observed. The formalin treatment recommended for stinking smut should control these diseases.

The oats and barley were soaked in a formalin solution, made up of 1 pint of formalin to 40 gallons of water, for fifteen minutes.

The seed was obtained by mass selection of heads from the cereal plots of 1914, except the following new strains received from the Cerealist at Ottawa: White Fife Ottawa 11, Early Russian and White Russian and samples of registered seed of wheat, oats, and barley received from all the active members of the Canadian Seed Growers' Association in Prince Edward Island, for a comparative test of strains to see that they were following close to the different variety types.

The paths and roads were all seeded with grass and clover at the same rate as the plots. Early in August the hay was removed from the paths. Every plot was rogued twice during the growing season.

EXPERIMENTS WITH SPRING WHEAT.

There was a very heavy growth of straw and all the plots of White Russian and Early Russian lodged badly.

WHEAT.—Average of Duplicate Plots.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inch.		Inches.	Lb.	Bu.	Lb.	Lb.
1	Marquis	May 17	Sept. 3	109	48	10	3	3,351	55	51	63·4
2	Huron	“ 17	“ 4	110	47	9·5	3·2	3,324	55	24	64·0
3	Early Russian	“ 17	“ 2	108	48	0·5	3·2	2,893	48	13	62·2
4	Red Fife	“ 17	“ 8	114	46	9·5	3	2,792	46	32	62·2
5	Early Red Fife	“ 17	“ 6	112	44·5	10	3	2,737	45	37	63·0
6	White Fife	“ 17	“ 7	113	45·5	7·5	3·2	2,721	45	21	61·1
7	White Russian	“ 17	“ 7	113	50·5	3	4	2,473	41	13	62·0
	The following varieties were sown in single plots:—										
1	Stanley	“ 17	“ 4	110	47	10	3	3,458	57	38	62·9
2	Chelsea	“ 17	“ 4	110	44	9	3	3,398	56	38	64·0

EXPERIMENTS WITH OATS.

Besides the regular duplicate uniform test plots, eight strains of Registered Banner oats were grown and three single plots of varieties that are not so promising as the others. The land was more uniform in character than it had been in any former year since the experimental work started at this Station, as shown by the uniformity of the duplicate tests.

OATS.—Average of Duplicate Plots.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inch.		Inches.	Lb.	Bu.	Lb.	Lb.
1	Banner	May 20	Sept. 8	111	56	1	9	3,996	117	18	33·4
2	Twentieth Century	“ 18	“ 3	108	53	1·5	9	3,484	102	16	36·4
3	O. A. C. 72	“ 18	“ 4	109	56·5	9·7	9	3,482	102	14	34·4
4	Swedish Select	“ 18	“ 3	108	56·5	1·5	8·5	3,459	101	25	35·2
5	Abundance	“ 18	“ 4	109	58·5	1·2	8·5	3,368	99	2	35·0
6	Siberian	“ 18	“ 3	108	56	9·7	9	3,339	98	7	36·2
7	Lincoln	“ 18	“ 3	108	49	10	8·2	3,289	96	25	37·3
8	Ligowo	“ 18	“ 3	108	46	7·5	6·7	3,255	95	25	36·0
9	Old Island Black	“ 18	“ 2	107	52	5	11	3,227	94	31	38·4
10	Victory	“ 18	“ 4	109	50·5	9·7	7·5	3,023	88	31	39·8
11	Gold Rain*	“ 18	“ 2	107	45	10	8	2,955	86	31	38·3
	The following varieties were sown in single plots:—										
1	Early Blossom	May 20	Sept. 8	111	52	7·5	8	3,435	101	1	37·7
2	Pioneer	“ 20	“ 2	105	46	10	8·2	2,749	80	29	38·0
3	Daubeney	“ 20	Aug. 25	97	44	8	7·7	2,723	80	3	34·0

*Note.—Gold Rain was badly damaged by sparrows; 20% probably injured.

EXPERIMENTS WITH BARLEY.

The barley plots were uniform and made strong vigorous growth. Charlottetown No. 80, a selection from Old Island Two-row, headed the list. The character of dropping its awns in the field, together with its tendency to heavy production, make this a very desirable strain for the province.

Barley.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inch.		Inches.	Lb.	Bu.	Lb.	Lb.
1	Charlottetown No. 80	June 2	Sept. 7	97	39	7·2	3·5	3,619	75	19	53·0
2	Gold	" 2	" 6	96	30	7	2·5	3,529	73	25	54·8
3	Swedish Chevalier	" 2	" 8	98	45	6·5	3·2	3,409	71	1	52·2
4	Stella	" 2	" 2	92	46	4	2·7	3,246	67	30	52·2
5	Trooper	" 2	" 2	92	42	7	2·5	3,199	66	31	50·2
6	O. A. C. 21	" 2	" 2	92	42	5	2·2	3,094	64	22	50·2
7	Odessa	" 2	" 2	92	43	2	2·5	3,056	63	32	51·0
8	Oderbruch	" 2	" 2	92	45	4	2·7	3,024	63	..	51·1
9	Manchurian	" 2	" 2	92	34	5	2·2	3,006	62	30	50·8
10	Invincible	" 2	" 5	95	42	6·5	2·7	2,929	61	1	52·0
11	Nugent	" 2	" 2	92	44	6	3·0	2,920	60	40	50·0
12	Early Chevalier	" 2	" 1	91	48	0	3·0	2,846	59	14	52·3
13	Canadian Thorpe	" 2	" 5	95	42	9	2·7	2,753	57	17	53·2
14	Albert	" 2	" 2	92	35	6	2·7	2,691	56	3	50·0
15	Standwell	" 2	" 2	92	49	6	3·2	2,636	54	44	54·8
16	Beaver	" 2	" 5	95	47	8	4·0	1,959	40	39	52·0

EXPERIMENTS WITH PEAS.

The backward season was unfavourable for peas. We sowed them, however, earlier than in former years and had much larger yields than formerly. The pea weevil again did much damage to the peas while growing.

Peas.—Test of Varieties.

Number.	Name of Variety.	Size of Pea.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw.	Average length of Pod.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
						Inch.	Inch.	Lb.	Bu.	Lb.	Lb.
1	Solo	Medium	May 22	Sept. 12	113	65	2·7	2,750	45	50	61·5
2	Prussian Blue	"	" 22	" 15	116	84	2·5	2,735	45	35	65·0
3	Golden Vine	Small	" 22	" 12	113	87	2·0	2,341	39	1	64·4
4	Arthur	Large	" 22	" 8	109	66	2·2	1,938	32	18	64·4

FIELD PLOTS OF CEREALS.

All available land at the Station was used in 1915 for the multiplication of the best strains of Registered grain to supply the growing demand for the very best seed. The average returns from the multiplying plots grown on the regular farm rotations were much higher than in any former year. The season was not so favourable as several former ones. The increase of the average returns was evidently due to the effect produced by the underdrainage and to the gradual improvement of the land by thorough tillage operations.

The fields of wheat did not have favourable weather conditions at harvest and the germination of these was correspondingly low. The four fields had an average germination of 65 per cent strong.

The oats and barley were saved in excellent condition for seed purposes. The average germination of the several lots of oats was 97 per cent strong and of the two lots of barley was 96 per cent strong.

These fields were carefully rogued twice during the season and all impurities and noxious weeds were removed.

MULTIPLYING PLOTS OF CEREALS.

SPRING WHEAT.

Variety.	Field.	Preceding Crop.	Acreage.	Yield per Acre	
				Bush.	Lb.
Early Red Fife	C-3	Potatoes	0·57	41	36
White Fife	G-7	"	0·4	35	52
Marquis	D-2	"	1·0	27	30
"	B-4	Turnips	1·0	25	55
		Average		32	43

OATS.

Variety.	Field.	Preceding Crop.	Acreage.	Yield per Acre.	
				Bush.	Lb.
Banner	A-4	Mangels	1·0	82	..
O. A. C. 72	F-3	Turnips	0·86	67	22
Banner	B-1	Hay	1·0	60	30
"	CC-4	Mixed grain	6·0	60	1
Victory	G-5.	Hay	0·4	59	26
		Average		66	2

BARLEY.

Variety.	Field.	Preceding Crop.	Acreage.	Yield per Acre.	
				Bush.	Lb.
Charlottetown No. 80	A-2	Hay	1·0	54	43
Manchurian	F-1	"	0·86	43	4
		Average		48	47½

CO-OPERATIVE TEST OF THREE VARIETIES OF OATS.

A variety test of oats on a co-operative basis was commenced in 1912 with a number of farmers in the eastern part of the province. Three varieties were chosen and duplicate plots of one-sixtieth acre each were sown under the supervision of the Seed Division, on five farms. The grain from all of the plots was threshed and weighed at the Experimental Station.

Co-operative test of plots of oats: Test of Banner, Ligowo and Old Island Black. The average of duplicate plots is here given.

Name of Experimenter.	Location.	Yield per Acre.					
		Banner.		O. I. Black		Ligowo.	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
Experimental Station	Charlottetown	117	17¾	94	31	95	25
S. M. Martin	Heatherdale	55	5	43	21	50	½
A. M. Stuart	Belle River	48	18	67	17	61	19
E. G. Giddings	Abney	46	29¾	55	12½	49	10¼
Ottis McLeod	Uigg	43	19	44	22½	45	..
Norman McLeod	Bridgetown	37	15	39	5¼	44	26½
Average yield per acre, 1915		60	20½	57	28	58	21
Grand average yield per acre 1912-15 from 36 plots each variety, tested on ten farms		62	2⅓	56	1⅓	54	12

From the above data it will be seen that Banner maintains a good lead over the other two varieties. The season of 1915 was favourable for Ligowo, as shown by the fact that in four of the trials it led over Banner and in three it led over Old Island Black.

The Old Island Black is a very open-panicled oat with a much thinner hull than either of the others and commands 2 cents more per bushel in all Maritime markets than white oats. Its only failing is that its straw is fine and weak. When grown on good rich land it is liable to lodge badly.

CHARLOTTETOWN.

COMPARATIVE EXAMINATION OF STRAINS OF REGISTERED GRAIN IN THE PROVINCE.

Seven members of the Canadian Seed Growers' Association forwarded samples of the strains of registered grain that they have improved. These were grown side by side with the uniform test plots of cereals on one-sixtieth acre plots.

A meeting of the Prince Edward Island branch of the Canadian Seed Growers' Association was held in the Cereal Division of the Experimental Station on August 26, 1915. Among those present, besides the members and farmers interested in registered seed, were the Dominion Cerealist, the Secretary of the Canadian Seed Growers' Association, the Maritime Representative of the Seed Division, and the District Representative for Kings County.

A careful examination was made of all the different strains and they were found to be wonderfully uniform. The growers were complimented on the trueness of their strains.

The following data were obtained from the test:—

WHEAT.

Variety.	No. of Plots.	Average Yield of Experimental Station Plots.		Average Yield of Canadian Seed Growers Ass'n Plots.	
		Bush.	Lb.	Bush.	Lb.
White Russian	3	43	38		..
"	3	..	..	48	26
Total	6	Average of all plots.		46	2

OATS.

Variety.	No. of Plots.	Bush.	Lb.	Bush.	Lb.
Banner	5	108	24	..	..
"	7		..	105	26
Total	12	Average of all plots.		107	..

BARLEY.

Variety.	No. of Plots.	Bush.	Lb.	Bush.	Lb.
O. A. C. 21	2	64	22		..
"	2			66	..¾
Total	4	Average of all plots.		65	11

I wish to thank all the men who supplied this Station with samples of their registered strains of cereals, and the men who have co-operated with us, for the very careful and painstaking assistance which they have given in connection with the above tests and experiments.

CHARLOTTETOWN.

EXPERIMENTAL FARM, NAPPAN, N.S.

W. W. BAIRD, B.S.A., SUPERINTENDENT.

SEASONAL NOTES.

The winter of 1914-15 was very unsettled. From January until the last of April, 40 inches of snow and 5·89 inches of rain were recorded with much thawing and freezing. Consequently the ground was bare the greater portion of the winter.

Spring opened up very late. Wet, cold weather was experienced well on to the last of May. Rain was recorded on ten different days in April and on sixteen in May, giving in that period, 7·72 inches. The mean temperature for May was 4·31° lower than the same period for the previous year.

Seeding operations commenced on June 1. Generally speaking, that date held true for the surrounding district. A few on gravelly and sandy farms were able to get some seeding done a few days earlier; but at this Farm, even on the underdrained fields, the land was hardly in a proper tillable state until June 1, owing to the excessive amount of moisture in the soil.

During the first two weeks in June the days were fine and warm, but the nights were cool, 2° of frost being recorded on the night of the 3rd. Therefore, the soil did not warm up readily. The greater portion of the cereals was sown during this period and notwithstanding the cool nights germination was very rapid, as 50 per cent of the grain sown on the 1st appeared above the ground on the 6th and practically all was showing on the 8th. The latter part of the month was very unsettled, wet, muggy weather prevailing. Though wheat and oats continued to make a healthy growth the barley did not. The leaves turned yellow, which greatly retarded the growth.

The grasses and clovers on the sod ground and most of the new-seeded fields came through the winter in excellent shape. These made exceptionally good growth. The newly-seeded fields that did not fare so well were on exposed hillsides. Neither the timothy nor the clover on the latter fields came on until very late in the season.

July was a good growing month. The weather was fine and warm and six showers that were recorded supplied sufficient moisture to stimulate the growth of all vegetation. Owing to the bad weather conditions early in the season, roots were not seeded until July 3 and part much later, the land not being workable.

August was quite unseasonable. Much rainy weather was experienced during the early and latter parts. The total precipitation was 4·67 inches; yet the mean temperature was 2° higher than for the same period the previous year. Roots made only fair growth, chiefly due to so much wet weather and the consequent abundance of weeds and the insufficient cultivation. All cereals made good growth, but weather was most unsatisfactory for hay-making.

September was rather cool throughout. The first two weeks were very fine with much fog in the early mornings. The weather was most favourable for the ripening of grain; in fact grain ripened up too quickly with the result that it did not fill so well. A heavy rain and wind storm on the 26th did much damage in lodging grain.

October was unsettled. The thermometer dropped to 24° on the 2nd. From the 3rd to 9th the weather was dull and rainy. The remainder of the month was fairly fine and cool with frequent light showers. During the fine weather the remaining portion of the grain was stored.

November was very unfavourable throughout. Six inches of snow fell on the 6th, but was removed by a heavy rain on the 7th. Quite heavy frosts were not uncommon during the latter part. On the night of the 23rd 13° was registered. This made it very difficult in the harvesting of roots.

December for the most part was quite typical of winter. Four inches of snow fell on the 1st. From the 2nd to the 7th was very mild. Some ploughing was done during this period. From the 7th to the 9th alternate rain and snow fell. Snow was recorded again on the 18th, 24th and 26th. The remainder of the month was very fine and cold.

Typical winter weather was not experienced during January, as the snow falls and heavy frosts were always followed by a very moderate or warm period. Therefore little sledding was realized during the month; while for the greater part of February and March splendid winter weather prevailed, which greatly facilitated lumbering operations.

SOME WEATHER OBSERVATIONS TAKEN AT NAPPAN EXPERIMENTAL FARM, 1915.

Month.	Temperature.			Precipitation.			Total Sunshine.
	Highest.	Lowest	Mean.	Rainfall.	Snowfall.	Total.	
	°	°	°	Inches.	Inches.	Inches.	Hours.
January	53	-10	21·61	2·69	14·00	4·09	75·10
February	54	-14	23·64	1·01	3·00	1·31	94·70
March	48	9	26·35	.....	12·00	1·20	75·60
April	62	18	36·50	2·19	11·00	3·29	100·90
May	71	26	45·72	4·43	....	4·43	136·15
June	81	30	56·44	3·57	....	3·57	195·00
July	81	43	62·99	1·95	....	1·95	215·10
August	81	34	63·04	4·67	....	4·67	186·60
September	78	32	56·49	1·47	....	1·47	175·70
October	68	24	48·11	4·11	....	4·11	145·60
November	57	19	38·46	4·63	....	4·63	47·90
December	52	6	28·59	3·96	8·00	4·76	64·40
Total for year				34·68	48·00	39·48	1512·15
Average for five years				30·79	54·34	36·73	1884·67
Total for six growing months, April to September				18·28	11·00	19·38	1009·45
Average for 5 years for six growing months, April to Sept.				17·74	8·50	18·59	1228·34

EXPERIMENTS WITH SPRING WHEAT.

Twelve varieties were grown in duplicate test plots of one-fortieth of an acre each. Only the named sorts are here reported on.

Seed was sown on June 1 at the rate of 1 bushel 3 pecks per acre. Due to unfavourable weather conditions, seeding was very late, much later than for the two previous years. Even on the underdrained fields the soil was unworkable as late as May 24. Consequently, the land was not ready for seeding until June 1. During the first week cool nights were experienced, yet notwithstanding this fact, the grain germinated very rapidly and made splendid growth through June, July, and August. On September 26 a very heavy wind and rain storm caused some damage by lodging the grain. The ripening was quite uneven, nor did the grain fill properly. The harvest weather was not very favourable to the proper curing and storing of grain

The following were the yields obtained:—

SPRING WHEAT.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning.
					Inches		Inches.	Lb.	Bu.	lb.	Lb.
1	Red Fife (Mackay)	June 1	Sept. 24	116	48	5	3·5	2,018	33	38	60·0
2	Red Fife (Chisholm)	" 1	" 24	116	50	8	3·5	1,838	30	38	59·0
3	Huron	" 1	" 20	112	46	10	3·0	1,770	29	30	59·0
4	White Fife	" 1	" 24	116	49	10	4·0	1,605	26	45	58·0
5	Early Red Fife	" 1	" 22	114	49	10	3·5	1,523	25	23	59·0
6	Stanley	" 1	" 24	116	50	10	3·5	1,508	25	8	58·0
7	Marquis	" 1	" 20	112	45	9	3·0	1,470	24	30	58·0
8	Red Fife	" 1	" 22	114	48	10	3·0	1,440	24	..	60·0
9	Bishop	" 1	" 22	114	45	9	3·2	1,358	22	37	58·0
10	Pioneer	" 1	" 22	114	42	6	3·0	1,283	21	23	59·5

The average yield from the plots of the named varieties was 26 bushels 21 pounds. This yield is about 11 bushels 26 pounds less than for the previous year, doubtless due to three causes: unfavourable weather conditions, lodging and the fact that the grain ripened up very quickly; therefore, the kernels were not properly filled.

AVERAGE FOR FIVE YEARS.

Seven varieties have been grown for five years, three for two years, and the two strains of Red Fife for only one year. The following table gives the named varieties grown, number of years tested, average dates of seeding and cutting, and average yield.

AVERAGE for Five Years.

	Name of Variety.	No. of Years in test.	Average date of sowing.	Average date of cutting.	Yield per acre	
					Bush.	Lb.
1	White Fife	5	May 17	Sept. 11	35	22
2	Huron	5	" 17	" 5	34	27
3	Red Fife (McKay)	1	June 1	" 22	33	37
4	Red Fife	5	May 17	" 9	33	30
5	Early Red Fife	5	" 17	" 11	32	32
6	Red Fife (Chisholm)	1	June 1	" 22	30	20
7	Stanley	5	May 17	" 8	30	20
8	Bishop	5	" 17	" 5	30	5
9	Marquis	5	" 17	" 6	29	33
10	Pioneer	2	" 26	" 17	26	3

From the above table it will be noted that White Fife gave the highest yield for the five years. The yield was 35 bushels 22 pounds. The second highest was Huron with 34 bushels 27 pounds. Though only tested for one year, the strain of Red Fife obtained from Mr. McKay gave slightly better results than the others.

The earliest date of sowing was May 6, 1913.

The latest date of sowing was June 6, 1915.

The earliest date of cutting was August 12, 1911.

NAPPAN.

The latest date of cutting was September 22, 1915.

The highest yield was obtained in 1914, from White Fife, which yielded 44 bushels 15 pounds. Bishop gave the lowest yield in 1913, namely, 20 bushels.

Though the above test shows that, taking one year with another, White Fife and Huron gave the highest average, it may be well to state that they did not always top the list. It was found that the varieties varied in position from year to year. This shows the importance of exercising all possible care in conducting such experiments, and the advisability of withholding judgment in regard to relative yields until the results of many years can be compared and averaged.

EXPERIMENTS WITH BARLEY.

A test with twelve varieties of barley was conducted in duplicate plots of one-fortieth of an acre each, six of two-row and six of six-row. The grain was sown at the rate of 2 bushels per acre on June 2. The land received the same treatment as did that for wheat. Weather conditions were more unfavourable for barley during the early stage of growth than for wheat, but it made very satisfactory growth later on and filled a little better than did the wheat, though slightly discoloured.

The following results were obtained:

Barley.—Test of Varieties.

Number.	Name of Variety.	Date of sowing.	Date of Ripening.	Number of days Maturing.	Average length of Straw including Head.	Strength of Straw on a scale of 10 points.	Average Length of head.	Yield of Grain per acre.	Yield of Grain per acre.		Weight per measured bushel after cleaning
					Inches		Inches.	Lb.	Bu.	Lb.	Lb.
1	French Chevalier (2-row)..	June 2	Sept. 13..	103	42	4	4·0	2,340	48	36	50·0
2	Gold (2-row)...............	" 2	" 11..	101	36	4	3·0	2,235	46	27	50·0
3	Invincible (2-row).........	" 2	" 15..	105	50	5	3·0	2,220	46	12	50·0
4	Swedish Chevalier (2-row)	" 2	" 13..	103	43	3	5·0	2,130	44	18	49·0
5	Oderbruch (6-row).........	" 2	" 6..	96	42	3	2·5	2,070	43	6	48·0
6	O. A. C. No. 21 (6 row)....	" 2	" 14 .	104	46	4	3·0	1,980	41	12	46·0
7	Canadian Thorpe (2-row)..	" 2	" 13..	103	48	5	3·0	1,950	41	2	48·0
8	Odessa (6-row)............	" 2	" 6..	96	42	2	2·5	1,935	40	15	48·5
9	Nugent (6-row)............	" 2	" 14..	104	40	5	2·7	1,905	39	33	49·0
10	Beaver (2-row)............	" 2	" 15..	105	46	3	3·5	1,845	38	21	50·0
11	Stella (6-row).............	" 2	" 16..	106	38	1	2·5	1,845	38	21	49·0
12	Manchurian (6-row)........	" 2	" 14 .	104	46	4	3·0	1,650	34	18	47·0

The average yield of all the barley plots was 59 bushels 2 pounds per acre.

The average yield of all plots of six-rowed barley was 39 bushels 25 pounds, which is about 6 bushels less than for the previous year.

The average yield of all plots of two-row barley was 44 bushels 8 pounds. This was about 8 bushels 6 pounds less than the yield for the previous year. It may be of interest to note that the two-row varieties gave the higher average yields both in 1914 and 1915 by 6 bushels 42 pounds and 4 bushels 31 pounds, respectively.

Nappan.

AVERAGES FOR FIVE YEARS.

In the six varieties of six-row all have been grown for five continuous years. In the two-row barley five only have been grown for five continuous years, Gold having been grown for two years only. The following tables give the average results obtained for each, from 1911 to 1915:—

BARLEY, SIX-ROW.—Averages for Five years.

Name of Variety.	No. of years in test.	Average date of sowing.	Average date of cutting.	Yield per acre.	
				Bush.	Lb.
1. O.A.C. No. 21	5	May 17	Aug. 28	45	40
2. Nugent	5	May 17	Aug. 27	45	1
3. Stella	5	May 17	Aug. 30	42	32
4. Odessa	5	May 17	Aug. 23	41	27
5. Manchurian	5	May 17	Aug. 27	40	46
6. Oderbruch	5	May 17	Aug. 23	40	20

BARLEY, TWO-ROW.—Averages for Five Years.

Name of Variety.	No. of years in test	Average date of sowing.	Average date of cutting.	Yield per acre.	
				Bush.	Lb.
1. Swedish Chevalier	5	May 17	Aug. 29	55	38
2. French Chevalier	5	May 17	Aug. 28	54	43
3. Invincible	5	May 17	Aug. 29	44	24
4. Canadian Thorpe	5	May 17	Aug. 28	42	22
5. Beaver	5	May 17	Aug. 28	40	17
6. Gold	2	May 27	Sept. 8	20	45

From the above table it will be noted that in the six-row O.A.C. No. 21 gave the highest average yield of all varieties tested, but that Nugent was a very close second.

In the two-row, Swedish Chevalier and French Chevalier were the two highest, there being very little difference in their yields.

It is also interesting to note that in most cases the two-row varieties gave better yields than did the six-row. The earliest and latest dates of sowing and cutting were May 7, 1913; June 2, 1916; August 5, 1911; and September 16, 1915, respectively.

EXPERIMENTS WITH OATS.

Fifteen varieties of oats were tested in duplicate plots of one-fortieth of an acre in size. The seed was sown on June 2 at the rate of 3 bushels per acre. Oats, like wheat and barley, suffered to a greater or less extent from unfavourable weather conditions; perhaps not quite so much in the earlier stage, but later on from lodging. As all varieties of grain were treated for smut the percentage was greatly reduced as compared with last year.

The following were the results obtained:—

Oats.—Test of Varieties.

Number.	Name of Variety.	Date of sowing.	Date of Ripening.	Number of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inches.		Inches.	Lb.	Bu.	Lb.	Lb.
1	Siberian	June 2	Sept. 22	112	50	3	8·0	2,580	75	30	34·0
2	Victory	" 2	" 22	112	52	4	7·0	2,520	74	4	37·0
3	Banner (McKay)	" 2	" 22	112	52	5	8·0	2,490	73	8	37·0
4	Pioneer	" 2	" 18	108	48	3	8·0	2,490	73	8	38·0
5	Banner (Chisholm)	" 2	" 22	112	52	5	8·0	2,460	72	12	37·0
6	Lincoln	" 2	" 22	112	51	2	7·0	2,415	71	11	37·0
7	Danish Island	" 2	" 20	110	54	2	8·0	2,280	67	2	35·0
8	O. A. C. No. 72	" 2	" 22	112	46	4	8·0	2,279	67	1	34·0
9	Gold Rain	" 2	" 20	110	48	3	7·0	2,250	66	6	37·0
10	Ligowo	" 2	" 20	110	50	2	7·5	2,220	65	10	34·0
11	Banner	" 2	" 20	110	55	3	8·0	2,175	63	33	35·0
12	Twentieth Century	" 2	" 21	111	50	4	7·0	2,055	60	15	35·0
13	Swedish Select	" 2	" 21	111	50	4	7·5	2,010	59	4	35·0
14	Abundance	" 2	" 20	110	54	3	7·0	1,830	53	28	34·0
15	Daubeney	" 2	" 14	104	48	2	7·0	1,440	42	22	30·0

The average yield of all plots of oats was 65 bushels 22 pounds, which is much below the average of a year ago, due principally to bad weather conditions; also to the fact that the grain ripened too rapidly to fill properly.

AVERAGES FOR FIVE YEARS.

The following are the average results obtained from eleven varieties of oats grown for five consecutive years, from 1911 to 1915, with the exception of Victory, which has been grown only four years:—

Oats.—Averages for Five Years.

Name of Variety.	No. of years in test.	Average date of sowing.	Average date of cutting.	Yield per acre.	
				Bush.	Lb.
1. Victory	4	May 19	Sept. 8	80	17
2. Pioneer	5	May 19	Aug. 28	77	22
3. Swedish Select	5	May 19	Sept. 4	76	27
4. Banner	5	May 19	Aug. 27	75	31
5. Danish Island	5	May 19	Sept. 1	75	31
6. Lincoln	5	May 19	Sept. 2	75	24
7. Twentieth Century	5	May 19	Aug. 31	75	21
8. Gold Rain	5	May 19	Aug. 31	74	22
9. Ligowo	5	May 19	Sept. 3	73	23
10. Siberian	5	May 19	Sept. 2	73	11
11. Abundance	5	May 19	Aug. 27	72	25

From the above table it will be noted that of those grown for five years Pioneer led with an average yield of 77 bushels 22 pounds, and that Swedish Select and

Banner are very close second and third. Victory for four years gave the highest, 80 bushels 17·5 pounds.

The earliest and latest dates of sowing and cutting were May 7, 1912; June 2, 1915; August 8, 1911, and September 22, 1915. The highest yield during the period was obtained from Victory, 99 bushels 24 pounds.

EXPERIMENTS WITH BUCKWHEAT.

Owing to insufficient acreage the buckwheat test was not made in duplicate. Five varieties were sown in uniform test plots of one-fortieth of an acre in size. The date of sowing was July 2, and the date of cutting September 20.

The following table gives the yields obtained:—

Buckwheat.—Test of Varieties.

Number.	Name of Variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inches.		Lb	Bush.	Lb.	Lb.
1	Silver Hull	July 2	Sept. 20	80	44	5	1,980	41	12	48
2	Grey	July 2	Sept. 20	80	44	4	1,960	40	40	48
3	Tartarian	July 2	Sept. 20	80	40	4	2,080	43	16	49
4	Rye	July 2	Sept. 20	80	43	6	2,120	44	8	48
5	Japanese	July 2	Sept. 20	80	45	9	2,200	45	40	46

The average of all plots of buckwheat was 43 bushels 4 pounds. Buckwheat, unlike other varieties of grain, was not affected to the same extent by weather conditions. In fact the yields above given are on the average 11 bushels 28 pounds more than was obtained the previous season.

AVERAGES FOR FOUR YEARS.

All five varieties have been tested for four consecutive years. The following are the average results obtained from each:—

Averages for Four Years.

Name of Variety.	No. of years in test.	Average date of sowing.	Average date of cutting.	Yield per acre.	
				Bush.	Lb.
1. Tartarian	4	June 8	Sept. 9	47	4
2. Silver Hull	4	" 8	" 9	44	38
3. Rye	4	" 8	" 9	42	24
4. Japanese	4	" 8	" 9	38	46
5. Grey	4	" 8	" 9	38	6

Nappan.

The Tartarian gave the highest with Silver Hull and Rye, second and third, respectively.

The earliest and latest dates of sowing and cutting are June 5, 1912; July 2, 1915; September 2, 1912; September 15, 1915, respectively. The highest yields were obtained in 1912, the variety being Tartarian, and yielded 47 bushels 24 pounds. Silver Hull gave the poorest yield in 1915.

PEAS.

Owing to the lateness of the season it was not considered advisable to sow peas.

FIELD CROPS OF SEED GRAIN.

Some thirteen and a half acres were sown in acre lots of wheat, oats, and barley for seed purposes.

The land was clay loam, ploughed in the fall of 1914 and thoroughly cultivated during the spring of 1915, in order to insure a perfect seed-bed. That on which the wheat was sown was the same as that on which the plot grain was sown. Part of the oats and barley were on the five year rotation. This land had received 25 tons of barnyard manure per acre in 1912, receiving nothing since but one crop of clover aftermath, which was ploughed under in the fall of 1914. The greater portion of this field is in a good state of fertility. A small portion at one end is very wet; consequently this reduced the yield considerably.

The other field on which the oats and barley were sown is under a three year rotation. This land received 15 tons of barnyard manure in 1914 and produced a crop of turnips and mangels. The east end of this field is near a shelter belt, hence it is protected from the sunshine, which results in a much poorer growth being obtained on it back to a depth of 30 feet, and consequently a lower yield per acre in grain threshed.

The following table gives the acreage of each and yields obtained:—

—	Date of seeding.	Date of ripening.	Total yield.		Yield per acre.	
			Bush.	Lb.	Bush.	Lb.
Wheat—						
1 acre Huron	June 2	Sept. 22	18	—	18	—
1 acre Red Fife	June 3	Sept. 22	15	30	15	30
¾ acre Marquis	June 3	Sept. 22	13	7	17	22
Oats—						
2 acres Banner (Ottawa)	June 4	Sept. 20	73	33	36	33
3 acres Banner (Nappan)	June 4	Sept. 20	121	37	40	23
3½ acres Ligowo	June 5	Sept. 20	101	28	29	3
1¼ acres Abundance	June 5	Sept. 20	54	14	43	18
Barley—						
1 acre French Chevalier	June 4	Sept. 18	33	—	33	—
½ acre Manchurian	June 4	Sept. 18	13	24	27	—

The seed from these acre lots of grain was put through the fanning mill twice and some of it three times; then gone over carefully by hand, thus ensuring seed grain of a high standard, which is for sale in small quantities.

EXPERIMENTAL STATION, KENTVILLE, N.S.

W. SAXBY BLAIR, SUPERINTENDENT.

THE SEASON.

The temperature during April remained fairly uniform; in fact, the mean average temperature during the latter half was the same as during the first half, and there were none of the warm drying days that usually occur during the last of April. The first half of May remained cool also, and as a result the ground did not dry out for early seeding. Seeding became quite general after the middle of May on light well-drained soils, but heavier soils were not fit for seeding until well into June. Considerable showery weather during the latter part of May and after the first week in June kept the naturally damp soil really too wet to work and much grain was put in without the soil having been thoroughly prepared, and as a consequence much of the grain came up thin.

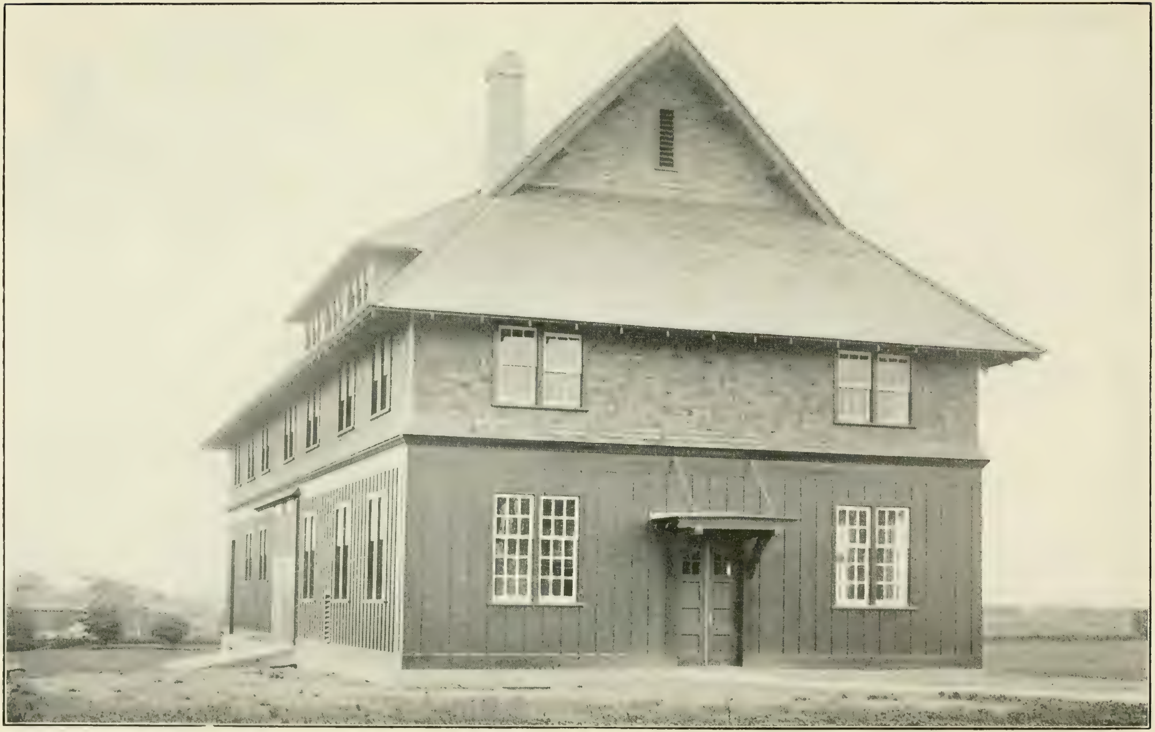
The mean average temperature during May was 64·14° as compared with 50·72° for the same month in 1914. The temperature after the first of June was about the same as previous years. The rain was pretty evenly distributed during the summer, although the total precipitation was not as great as either 1913 or 1914. Crops did not at any time suffer for want of moisture, and, in fact, on naturally wet land there was evidence of much injury from excessive moisture.

The sunshine during the summer was not as great as in former years and this, with quite a noticeable absence of drying winds, together with a fairly even distribution of rain, accounts for the land remaining so moist during the season. The total rainfall for the six months commencing April 1 was 12·84 inches as compared with 15·67 in 1914 and 16·66 for the same period in 1913. The total hours of bright sun for the same period was 1026·5 as compared with 1159·7 in 1914 and 1232·5 in 1913.

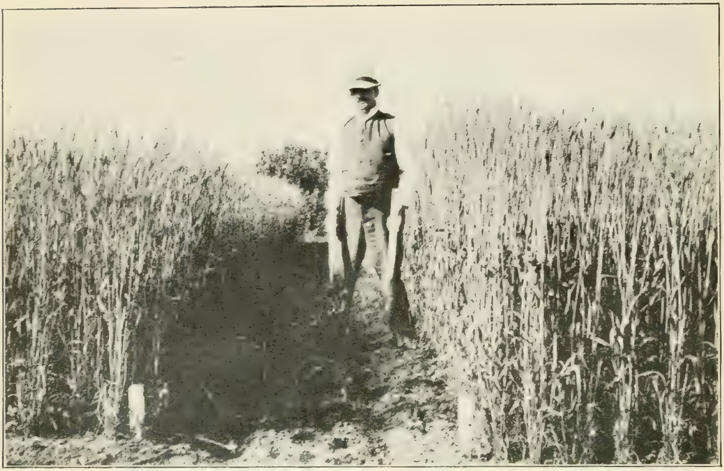
The grain crops on the whole were lighter than one would expect from the apparently favourable season. This was in part due to the grain being thin as a result of conditions following the seeding, and in part to the general tendency of grain not to stool as much as usual. The heads although well filled were not long, and the results at threshing time were generally disappointing.

GRAIN.

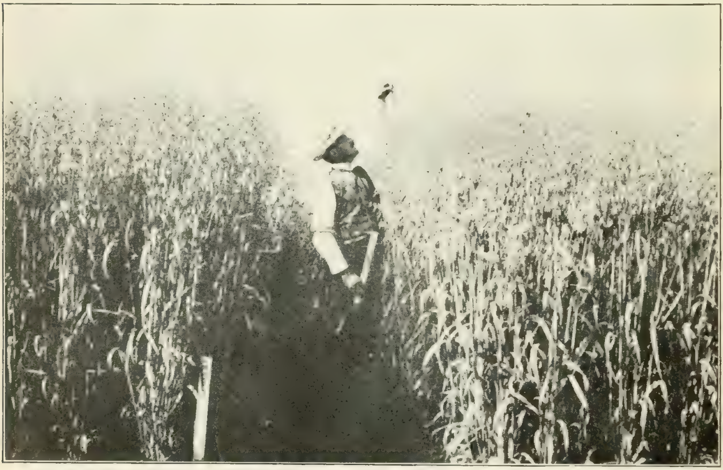
The land given to cereal work this season was much more uniform than that used in previous tests, and the crop was fairly even. The soil is a light loam, and was in corn in 1914. The ground was ploughed after the corn was harvested in the fall of 1914, and the following spring was limed with 2,000 pounds ground limestone per acre which was well worked into the soil with the disc harrow and twelve-tooth two-horse cultivator. Acid phosphate at the rate of 400 pounds per acre was then applied and harrowed in. The grain was then seeded with the disc drill, and the area rolled. Soon after the grain came through, nitrate of soda at the rate of 100 pounds per acre was scattered broadcast. It will be noticed that duplicate areas of wheat were seeded at the rate of 1½ bushel and 3 bushels per acre. The object in doing this was to produce wheat for poultry rather than for seed or milling. The quality of the seed from the thick seeding was decidedly inferior to the thin seeding; it, how-



Cereal Division Building at Ottawa.



Characteristic difference in growth of Red Fife and Prelude Wheat, at Lacombe, Alberta.



Plots of Ligowo and O. A. C. 72 oats, Lacombe Experimental Station, 1915.

ever, was excellent for poultry feeding. The plots were one-half acre each. The seed was sown May 17, and the time of harvesting, character of growth, and yield per acre are given in the following table:—

GRAIN.

Variety.	Rate of seeding.	Date of seeding.	When cut.	Length of straw inches.	Weight of straw per acre.		Yield per acre.	
					Tons	Lb.	Bush.	Lb.
Wheat—								
Marquis	3 bush.	May 17	Aug. 27	40	1	1,266	23	52
"	1½ "	" 17	" 27	40	1	616	16	34
Red Fife	3 "	" 17	Sept. 3	41	1	1,034	21	56
"	1½ "	" 17	" 3	41	1	334	16	58
Oats—								
Victory	2½ "	" 17	Sept. 2	46	1	1,830	59	32
Banner, Ottawa 49	2½ "	" 17	" 2	46	1	1,413	55	2
Banner	2½ "	" 17	" 2	46	1	1,632	57	31
Daubeney	2½ "	" 17	Aug. 20	37	1	180	35	—
Barley—								
Canadian Thorpe	2 "	" 17	Aug. 27	35	1	170	21	36
Manchurian	2 "	" 17	" 20	37	1	70	22	18
Peas—								
Arthur	2½ "	" 18	Sept. 7	33	1	126	16	30
Golden Vine	2½ "	" 18	" 11	32	1	87	13	45

COMMON VETCH.

The common vetch is used very largely by the fruit grower for seeding in the orchard for a cover crop after the spring cultivation is finished. This plant seems more suitable than clover, in that it makes more rapid growth, and as it thrives better than clover on acid soils it seems better adapted for this purpose than any of the other legumes. It is also more suitable for old orchards which throw considerable shade.

The price of seed has advanced very considerably during the past few years owing to the supply from Russia being largely cut off, and it has been thought that the fruit grower might with profit grow his own seed. To get information on the question a plot of one-tenth acre was seeded to vetch on May 18. The ground on which it was grown is a sandy loam of rather low fertility, which had been in corn the previous season. The ground was limed at the rate of 1 ton ground limestone and 400 pounds of acid phosphate per acre. The growth was fair but the seed ripened unevenly. The crop was harvested September 21. The yield of seed was 79 pounds, or 13 bushels and 10 pounds per acre. About one-half of the seed was of excellent quality; the other was apparently not well matured and wrinkled considerably. It germinated 84 per cent in greenhouse soil tests. It seems that a soil of better fertility than that on which this was grown should be selected for seed production.

FLAX FOR FIBRE.

Two small plots of flax were seeded on May 18. The ground was a sandy loam of medium fertility. The crop made excellent growth. The seed was sown at the rate of 84 pounds per acre, which is the rate usually recommended for fibre. It is important that the seed should be sown thick to prevent the plants from branching, as long single stalks are desired.

The flax was pulled August 18, just as the seed pods were turning brown and before the flax was ripe enough to cut for seed. The height and yield of cured straw are given in the following table:—

Variety.	Seeded.	When pulled.	Days maturing.	Height inches.	Yield of plants dried per acre.
					Pounds.
Longstem	May 18	August 18	92	39	5,111
Novelty	" 18	" 18	92	30	4,309·5

EXPERIMENTAL STATION, FREDERICTON, N.B.

W. W. HUBBARD, SUPERINTENDENT.

The season until August was so wet as to be almost disastrous to good grain crops. April was cloudy, cold, and wet; May followed with sixteen rainy days, and at no time was any but especially well-drained land fit to cultivate and seed. Unfortunately on the Station Farm there was not much well-drained land available for grain, so seeding was very late and a good deal of the crop was drowned out after seeding by wet weather in June and July. June had twenty wet days, and July fourteen. On one of them 3·26 inches of rain fell within the twenty-four hours. From May 1 to September 1 there was a rainfall of 19 inches. The average rainfall for these five months for the last forty-one years has been 14½ inches. Harvesting weather was, however, warm and dry. Throughout New Brunswick generally much land intended for cereals was not seeded at all, and some was seeded so late that crops did not ripen satisfactorily.

OATS.

The principal grain crop on the Station was oats. Twenty-four and three-fifths acres were sown, all but two and a half acres were on new land very rough and very wet. The following is a statement of the field varieties:—

—	Date of seeding.	Ripe.	Acres.	Yield per acre.
				Bushels.
1. Banner, N.B. seed	May 21	Sept. 13	2½	42
2. Banner	" 21–24	" 13	3¼	34·7
3. Banner, P.E.I. seed	" 31	" 20	5¼	20
4. Liowo	June 2–3	" 22	5¼	22·3
5. Ngw Market	" 3	" 23	5¾	10·8
6. Eerly Blossom	" 3	" 24	2	21
7: Baanner, Ottawa 49	" 4	" 16	⅗	53·3

Counting in 18 bushels of grain more or less mixed, the total crop threshed out 594 bushels, making an average of 24·1 bushels per acre.

Plot No. 1 covered an area in orchard under fertilizer experiment, some plots were well fertilized for last year's potatoes, others were not fertilized at all, and some plots with incomplete fertilizer.

Plot No. 2 was newly broken rough land without fertilizer of any kind, sowed broadcast and covered with drag harrow.

Plots 3, 4, 5, and 6 were also all new rough land, very uneven, and parts of it very wet. The ground was very full of roots and many boulders which prevented getting the crop off part of the area. The wet season also kept many of the low spots full of water, drowning out about 30 per cent of the crop.

Plot 7 was fertilized last year for corn. It was rather wet and could not be earlier seeded.

BUCKWHEAT.

Five acres of very wet newly cleared land were sown with 2 bushels of rough buckwheat, 2 bushels of smooth (Silver Hull) and 2 bushels of barley or rye buckwheat on the 3rd and 5th July. Part of the crop was drowned out, and not much was expected from the balance. It was cut on the 25th and 27th September, and threshed out a total of 51 bushels.

PEAS.

One bushel of Golden Vine peas, inoculated with nitro culture, was sown on one-third acre on June 8, and an equal quantity on the same area on the same date, not inoculated. No difference between the two plots could be discerned at any time and neither of them got sufficiently ripe to get them properly threshed. It was found impossible to dry the threshed grain or to compute the yield.

Arthur peas were sown on three-fifths of an acre on the 3rd June, and ripened pretty well. The yield was 18 bushels.

TEST OF VARIETIES.

Five varieties each of wheat, oats, and barley were grown on plots of one-sixtieth of an acre each. Each variety was grown in quadruplicate; four plots scattered over the area of the field being used. In this way it was hoped to overcome the special soil conditions of any one plot and make a fair test between the different varieties. The area allotted for this work needed drainage to make it independent of very wet seasons, and as this work could not be overtaken till the spring of 1915, seeding had to be delayed till the drainage was completed and the soil thoroughly cultivated.

The land was made ready by June 1, was surveyed and staked into eighty-one plots, and seeding was accomplished on the 3rd and 4th June. In 1913 the land was planted to potatoes with 750 pounds per acre of a 4-8-6 fertilizer, and in 1914 it was planted to corn with 16 tons barnyard manure per acre.

Seeding was done with a drill at the rate of 2 bushels wheat, 3 bushels oats, and 2 bushels barley per acre.

Germination was rapid and the results were as follows:—

WHEAT.

—	Date of sowing.	Date of ripening.	No. of days maturing.	Yield per acre. of grain.	Remarks.
				Bush.	
Prelude	June 3	Aug. 24	81	20	Straw and heads very short, but fine sample of grain. Slightly affected with smut.
Early Red Fife	" 3	Sept. 4	92	27	Good growth and good sample. Free from smut.
Huron	" 3	" 4	92	28	Extra good growth, good sample grain. Badly affected with smut.
Marquis	" 3	" 4	92	15	Fair growth, straw and heads affected with fungus growth very shrunken grain. Slightly affected with smut.
Red Fife	" 3	" 16	104	22	Good growth and fair sample grain, free from smut.

OATS.

—	Date of sowing.	Date of ripening.	No. of days maturing.	Yield per acre of grain.	Remarks.
				Bush.	
Eighty Day	June 3	Aug. 23	80	55	Straw very short, but good heads, free from smut.
Daubeney	" 3	" 24	81	47	Straw medium with good heads, free from smut.
Banner	" 3	Sept. 16	104	58	Straw good length and fair heads, badly lodged and badly affected with smut.
Victory	" 3	" 16	104	71	Straw good length and stood up well, good heads, practically free from smut, only 5 heads being discovered.
Ligowo	" 3	" 21	109	51	Stout straw. Fair heads, no lodged, free from smut.

BARLEY.

—	Date of sowing.	Date of ripening.	No. of days maturing.	Yield per acre of grain.	Remarks.
				Bush.	
Early Chevalier	June 3	Aug. 24	81	41	Fair straw and heads, free from smut.
Gold	" 3	" 24	81	46	Short straw, good heads, slight smut.
O. A. C. 21	" 3	Sept. 1	89	43	Fair straw and heads, considerable smut.
Manchurian	" 3	" 1	89	40	Fair straw and heads, slight smut.
Canadian Thorpe	" 3	" 1	89	29	Short straw and heads, slight smut.

Two samples of flax seed were sown in small plots on 4th June, from which to test the adaptability of stalks for linen fibre. These were "Longstem" and "Novelty." On July 30 Longstem had reached a height of 36 inches and was in full blossom. Novelty at that date was only 22 inches high and just beginning to bloom; the latter grew 6 inches more by 15th August, and was not quite through blossoming when pulled, 1st October. Longstem had a height of 38 inches, and Novelty 30 inches. Sample bundles of each were forwarded to Ottawa for fibre test. The land was a sandy loam which was manured in 1914, for corn, with 16 tons barnyard manure per acre.

FREDERICTON.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIERE, QUE.

JOSEPH BEGIN, SUPERINTENDENT.

Up to the present it has not been possible to carry on any variety tests of cereals, owing to the unsuitable condition of the land. We are, however, preparing a certain area for this work, and expect next spring to be able to commence a regular series of experimental plots.

Last season we sowed on our regular rotations 1 acre each of the following varieties: Marquis and Huron wheats; Daubeney and Ligowo oats; Manchurian and Success (beardless) barley; and Arthur peas. The results obtained are given below:—

Variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Yield per acre.	
				Bush.	Lb.
Marquis wheat	May 19	Sept. 3	106	38	20
Huron wheat	“ 19	“ 5	108	41	10
Ligowo oats	“ 21	“ 3	103	72	15
Daubeney oats	“ 21	“ 1	101	79	18
Success (beardless) barley	“ 29	Aug. 24	87	31	—
Manchurian barley	“ 25	“ 26	92	37	—
Arthur peas	“ 20	Sept. 1	103	33	—

EXPERIMENTAL STATION FOR CENTRAL QUEBEC.

GUS. LANGELIER, SUPERINTENDENT.

TEMPERATURE AT CAP ROUGE IN 1915

As far as grain growing is concerned, the season can be considered one of the best in years, and yields were higher than usual in this district. Seeding operations were in full swing during the second and third weeks of May, which means that spring was about an average one for earliness. From the 16th of the above month until the 23rd of October there was not a single frost, which is unusual in this part of the country. As a whole, the five months which may be called the growing season for grain, May, June, July, August, and September, were a little warmer, drier, and duller than the average for the past three years, the mean temperature for this period being 1·07 degrees higher, the precipitation 0·67 inch less, and the number of hours of sunshine 5·2 fewer than during 1912-13-14.

INVESTIGATIONS WITH GRAIN.

Investigations with grain at this Station comprise; (1) tests of different varieties of spring wheat, barley, oats, peas, flax, to find out their relative yielding power and earliness; (2) the improvement of the leading kinds by selection; (3) the production of seed under field conditions; (4) the comparison of different mixtures for live stock feed; (5) the growing of grain for hay production.

VARIETY TESTS.

The trial plots, all in duplicate, are of one-sixtieth acre and come in a regular three-year rotation of hoed crop, grain and hay. They are on a uniform though rather poor piece of sandy loam with shale about eighteen inches from the surface. The land gets an application of 20 tons of barn yard manure every three years; it was ploughed in October 1914 and double disced twice, harrowed, rolled, and sown with a drill on May 17 and 18. All the plots were rogued and kept clean during the growing season. The grain was not hurt by disease, lodging, or pests; it was cut by hand, and threshed in a specially constructed and easily cleaned machine.

SPRING WHEAT.

Eight varieties were tested: Bishop, Chelsea, Early Red Fife, Early Russian, Huron, Marquis, Prelude, Red ife. The highest yielder was Chelsea, tried here this season for the first time; it gave 1,738 pounds of grain per acre, and matured in ninety-three days. The earliest was Prelude, which ripened in eighty-five days, and gave 1,508 pounds of grain per acre. The average of five years places Huron first with 1,406 pounds per acre; during that period, it was just two days later to ripen than Marquis, which only gave 1,049 pounds per acre. Huron is a bearded variety, and its baking qualities are not of the very best, but it is unquestionably the highest yielder of any variety tried here since 1911, and it is the spring wheat which seems best adapted to central Quebec. The average yield for the eight varieties tried in 1915 was 1,435 pounds per acre, and the average number of days to come to maturity was ninety-four.

The following tables give details about results of 1915 and also about all varieties tested during three years or more:—

Number	Name of variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.	
					Inches.		Inches.	Lb.	Bu.	lb.
1	Chelsea	May 18	Aug. 19	93	33	10	3·5	1,738	28	58
2	Prelude	" 18	" 11	85	30	9	2·5	1,508	25	8
3	Huron	" 17	" 18	93	31	10	3·3	1,488	24	48
4	Early Red Fife	" 18	" 23	97	33	10	3·5	1,485	24	45
5	Marquis	" 18	" 26	100	28	10	3·0	1,332	22	12
6	Early Russian	" 17	" 20	95	30	10	3·0	1,320	22	..
7	Bishop	" 17	" 19	94	32	10	3·3	1,305	21	45
8	Red Fife	" 18	" 28	102	28	10	2·7	1,305	21	45

Rank for yield	Name of variety.	Number of years under test.	Average number of days maturing.	Average yield of grain per acre.	Average yield of grain per acre.		Years under test.	Remarks
				Lb.	Bush.	lb.		
1	Huron	5	101	1,406	23	26	1911-2-3-4-5	
2	Preston	3	101	1,315	21	55	1911–12–13	
3	Bishop	3	96	1,245	20	45	1911–12–15	Total failure in 1913
4	Early Red Fife	5	102	1,127	18	47	1911–2–3–4–5	
5	Marquis	4	99	1,049	17	29	1911–2–4–5	"
6	Red Fife	4	101	831	13	51	1911–2–4–5	"
7	Yellow Cross	3	99	825	13	45	1911–2–3	

CAP ROUGE.

OATS.

Six varieties were tested: Banner, Daubeney, Eighty Day, Gold Rain, Ligowo, Victory. The highest yielder was Banner with 2,404 pounds per acre, and it matured in ninety-two days. The earliest was Eighty Day which ripened in eighty days, but it was the lowest yielder with 1,758 pounds per acre. The average of five years places Banner first with 2,381 pounds per acre, but it is eleven days later than Eighty Day, which gave 1,830 pounds per acre. Banner is unquestionably the best variety of oats for this district and is strongly recommended. The average yield for the six varieties tried in 1915 was 2,092 pounds per acre, and the average number of days to come to maturity was eighty-nine.

The following tables give details about results of 1915, and also about all varieties tested during three years or more:—

Number.	Name of variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.	
					Inches.		Inches.	Lb.	Bu.	Lb.
1	Banner	May 18	Aug. 18	92	40	10	8·0	2,404	70	24
2	Gold Rain	“ 18	“ 17	91	38	10	8·0	2,244	66	..
3	Ligowo	“ 17	“ 17	92	34	10	7·5	2,185	64	9
4	Victory	“ 17	“ 17	92	37	10	7·3	1,997	58	25
5	Daubeney	“ 18	“ 10	84	31	10	7·0	1,965	57	24
6	Eighty Day	“ 17	“ 6	80	29	10	6·0	1,758	51	24

Oats, 1911-15.

Number.	Name of variety.	Number of years under test.	Average number of days maturing.	Average yield of grain per acre.	Average yield of grain per acre.		Years under test.	Remarks.
				Lb.	Bush.	Lb.		
1	Banner	4	96	2,381	70	1	1911–13–14–15	Did not ripen in 1912.
2	Gold Rain	5	99	2,299	67	21	1911–12–13–14–15	
3	Victory	4	95	2,199	64	23	1911–13–14–15	Did not ripen in 1912.
4	Daubeney	5	90	2,017	59	11	1911–12–13–14–15	
5	Siberian	3	107	1,980	58	8	1911–12–13	
6	Ligowo	5	102	1,950	57	12	1911–12–13–14–15	
7	Twentieth Century	3	106	1,890	55	20	1911–12–13	
8	Eighty Day	5	87	1,830	53	28	1911–12–13–14–15	
9	Abundance	3	106	1,765	51	31	1911–12–13	
10	Thousand Dollar	3	106	1,550	45	20	1911–12–13	

FIELD PEAS.

Five varieties were tested: Arthur, English Grey, Golden Vine, Prussian Blue, Solo. The highest yielder was Solo, tried here this season for the first time; it gave 1,800 pounds of grain per acre and matured in ninety-two days. The earliest was Golden Vine which ripened a day earlier and gave 1,779 pounds of grain per acre. The average of five years places Arthur at the top with 1,966 pounds per acre and it was just a day later than Golden Vine which gave 1,778 pounds per acre. Arthur is recommended to farmers of Central Quebec, as it does very well here. The average yield for the five varieties tried in 1915 was 1,629 pounds of grain per acre and the average number of days to come to maturity was ninety-five.

The following tables give details about results of 1915 and also about all varieties tested during three years or more:—

Number.	Name of variety.	Size of pea.	Date of sowing.	Date of ripening.	Number of days maturing.	Average length of straw.	Average length of pod.	Yield of grain per acre.	Yield of grain per acre.	
						Inches.	Inches.	Lb.	Bu.	Lb.
1	Solo	Medium	May 17	Aug. 17	92	28	2·2	1,800	30	..
2	Golden Vine	Small	" 18	" 17	91	26	1·7	1,779	29	39
3	English Grey	Medium	" 18	" 24	98	30	2·0	1,590	26	30
4	Arthur Selected	"	" 17	" 17	92	34	2·5	1,564	26	4
5	Prussian Blue	"	" 18	" 24	98	32	2·0	1,410	23	30

Field Peas, 1911-15.

Rank for yield.	Name of variety.	Number of years under test.	Average number of days maturing.	Average yield of grain per acre.	Average yield of grain per acre.		Years under test.	Remarks.
				Lb.	Bush.	Lb.		
1	Arthur	4	99	1,966	32	46	1911–13–14–15	Destroyed by aphis in 1912.
2	English Grey	4	102	1,832	30	32	1911–13–14–15	"
3	Golden Vine	4	98	1,778	29	38	1911–13–14–15	"
4	Prussian Blue	4	102	1,464	24	24	1911–13–14–15	"

BARLEY

Five varieties were tested (the figure 2 follows the names of the two-rowed and 6 that of the six-rowed): Early Chevalier (2), Gold (2), Manchurian (6), O.A.C. 21 (6), Success (6). The highest yielder was Manchurian, which gave 1,942 pounds per acre and ripened its grain in eighty-one days. The earliest, as usual, was Success, which came to maturity in seventy-seven days with a yield of 1,743 pounds per acre. Manchurian, to the present, seems the best adapted to this district and is recommended to farmers.

The following table gives details about results of 1915. No figures are given for the past five years, because this crop has practically been a failure until 1914:—

Number.	Name of variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.	
					Inches.		Inches.	Lb.	Bu.	Lb.
1	Manchurian, 6 row	May 18	Aug. 7	81	30	10	2·5	1,942	40	22
2	Early Chevalier, 2 row	" 17	" 5	80	32	10	3·5	1,905	39	33
3	Gold, 2 row	" 17	" 11	86	21	10	2·5	1,744	36	16
4	Success, 6 row	" 18	" 3	77	27	9	2·5	1,743	36	15
5	O. A. C. No. 21, 6 row	" 18	" 9	83	27	10	3·0	1,717	35	37

FLAX.

Two varieties were grown: Longstem and Novelty. The first mentioned was ripe in 106 days and gave 664 pounds of seed to the acre, whilst the last was ripe two days later but gave 878 pounds of seed per acre. The average length of the plants was 35 inches for Longstem and 22 for Novelty. It seems by this one trial that one variety would be more suitable for fibre whilst the other would give more seed.

The following table gives details for 1915, the first year that flax was tried at this Station:—

Number.	Name of variety.	Date of sowing.	Date of ripening.	Number of days maturing.	Average length of plants.	Yield of seed per acre.	Yield of seed per acre.	
					Inches.	Lb.	Bu.	Lb.
1	Longstem	May 20	Sept. 3	106	35	664	11	48
2	Novelty	" 20	" 5	108	22	878	15	38

PLANT BREEDING.

Work was continued in isolating the heaviest yielding strains of Banner oats, Huron wheat, Manchurian barley, and Arthur peas. As supposedly pure lines were used to start with, it is not expected that any extraordinary results will be obtained. But it is hoped that by using rather easy methods of selection, a few good farmers in many localities can be induced to do the same, thus avoiding the haphazard way of buying new seed every two or three years. By 1917, both Banner oats and Huron wheat from the Station's selection will be tried in the variety tests.

CAP ROUGE.

SEED GROWING.

Huron wheat, Manchurian barley, Arthur peas, and Banner oats are the varieties which have done best here and which are recommended to the farmers of central Quebec. Every year, a couple of acres of the three former, and from 10 to 20 acres of the latter are grown especially for seed, with the utmost care. The fields are kept free of weeds and rogued during the growing season. Stook covers are used to prevent discolouration of the grain, a specially constructed and easily cleaned machine does the threshing, a regular fanning mill and a Marot grader clean and classify the seed which is put up in neat bags with the name of the Station printed on them and sealed so that no pilfering can take place. This entails lots of work, but farmers who buy seed at this Station derive a great benefit from this and it is hoped that the more careful ones will grow and sell grain in their locality, thus spreading the good work started here. This is all the more important because good seed grain is unfortunately the exception in central Quebec. That the painstaking work undertaken at this Station is appreciated can easily be seen by the fact that many orders for seed had to be refused, the supply being early exhausted. The prices at which it is sold are as follows: Banner oats, $1 per bushel of 34 pounds; Huron wheat, $1.75 per bushel of 60 pounds; Manchurian barley, $1.50 per bushel of 48 pounds; Arthur peas, $2.50 per bushel of 60 pounds.

MIXTURES FOR GRAIN PRODUCTION.

This seems to be a vexed question as some farmers are sure that they get more pounds per acre by sowing two or three kinds of grain together than they would with only one, whilst others say that for stock feeding, especially, it is very seldom that the cereals used in the mixtures can be fed together to the same class of stock with advantage, and that it is better to sow them separately and mix them afterwards as required.

In 1915, the mixtures did not yield more than the single varieties, but it seems better to await the results of at least two or three years before giving figures.

GROWING GRAIN FOR HAY PRODUCTION.

For different reasons, it happens that sometimes meadows are much poorer than usual and farmers look to a crop which can be grown for hay in a single season. Different varieties of oats, also mixtures were used for this purpose in 1915 with the following results:—

Oats,	Gold Rain	7,200	pounds hay per acre.
"	Victory	6,126	" " "
"	Banner, and vetches	6,060	" " "
"	Banner, with vetches and peas	4,680	" " "
"	Banner	4,440	" " "
"	Ligowo	3,900	" " "
"	Banner, and Peas, Golden Vine	3,368	" " "

All the above were grown on one-sixtieth acre plots. Admitting that, possibly, the crop would be better on a small chosen area than on a larger one, it is interesting to note that, during the same season, hay averaged only 3,006 pounds per acre at this Station, under field conditions.

According to Henry, cured hay from different sources contains the following quantities of digestible nutrients per 100 pounds:—

Feed.	Total dry matter.	Crude protein.	Carbohydrates.	Fat.
Timothy	86·8	2·8	42·4	1·3
Red clover	84·7	7·1	37·8	1·8
Mixed grasses and clover	87·1	5·8	41·8	1·3
Oat	86·0	4·7	36·7	1·7
Oat and Pea	89·5	7·6	41·5	1·5
Oat and Vetches	85·0	8·3	35·8	1·3

With these figures we come to the following conclusions for 1915, as to the number of pounds of digestible nutrients produced per acre, from hay of different kinds:—

Hay.	Yield of hay per acre.	Total dry matter.	Digestible nutrients per acre.		
			Crude protein.	Carbohydrates.	Fat.
	Lb.	Lb.	Lb.	Lb.	Lb.
Banner oats and vetches	6060	5151·0	502·98	2669·48	78·78
Oats, Gold Rain	7200	6192·0	338·40	2642·4	122·4
" Victory	6120	5263·0	287·64	2246·04	104·04
Banner oats and Golden Vine peas	3360	3007·2	255·00	1394·40	50·40
All hay from oats	5415	4656·9	254·505	1987·305	92·05
Clover	3085	2612·59	219·035	1166·13	55·53
Oats, Banner	4440	3818·4	207·68	1628·48	74·48
" Ligowo	3900	3354·0	183·30	1431·30	66·30
Timothy	2923	2537·16	81·84	1239·35	37·999

The most interesting results of this experiment are that hay can easily be grown in a single season from oats, or from oats mixed with a leguminous plant such as field peas and vetches, also that the hay thus grown contains a great many more pounds of digestible nutrients per acre, especially the valuable protein, than do clover or timothy. To offset this great advantage, there is the extra cost of growing the oats or the mixtures, also the fact that these must be considered catch crops, as they are generally seeded too heavily to permit a fair growth of clover or timothy with them. A few years' trials will no doubt throw more light on all these points.

CAP ROUGE.

MISCELLANEOUS.

DIFFERENT CEREALS AS PRODUCERS OF DIGESTIBLE NUTRIENTS.

A comparison of the different kinds of cereals as producers of digestible nutrients per acre is interesting and the following table takes in every plot of the variety tests since five **years**:—

DIGESTIBLE Nutrients furnished by different Grains per acre.—Average of 5 years.

Kind of grain.	Number of plots.	Grain per acre.	Dry matter per acre.	Digestible nutrients per acre.		
				Protein.	Carbohydrates.	Fat.
		Lb.	Lb.	Lb.	Lb.	Lb.
Peas	38	1723	1464·550	339·431	849·439	6·89
Oats	58	2028	1817·083	216·996	1020·084	77·06
Barley	45	1020	909·840	85·680	666·06	16·32
Wheat	59	1066	954·070	82·708	719·55	15·99

On account of certain peculiarities of soil, barley and wheat did not do as well as they should until 1914, and it is possible that a few more years may bring them into better positions. An important point is to find field peas at the head of the list; they certainly deserve more consideration than they are now getting.

EXHIBITIONS.

Grain grown at this Station was exhibited at eleven different places during the fiscal year: at four New England Fairs (for the Department of Interior) and at seven shows in the province of Quebec. The exhibit at the Quebec Seed Fair elicited much praise, and can be truthfully said to have been very good.

CAP ROUGE.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

J. A. McCLARY, SUPERINTENDENT.

Regular experimental work in the testing of different kinds of grain has not been started at this Station, but approximately 15 acres have been set apart for cereal work. This land was broken up in the fall of 1915, so as to be able to start a three year rotation which will be followed for cereal work. For the first year, one-third will be plotted off into one-sixtieth acre plots and all sown to one variety. One-third will be in hoed crop this year; the remainder will be sown to clover and ploughed down. During the past year the main crop consisted of 48 acres of Banner oats, which yielded 26 bushels per acre. Eight acres of Marquis wheat were sown in the cultural orchard.

EXPERIMENTAL FARM, BRANDON, MAN.

W. C. McKILLICAN, B.S.A., SUPERINTENDENT.

The season of 1915 opened with an early spring and favourable weather for seeding, which was completed at an early date. Then there came a long period of cold weather. There were repeated hard frosts during May and until about the 20th of June, and even July was comparatively cold. During May and June the grain appeared to be making slow progress, but it was getting well rooted so that it was able to make rapid development when favourable weather came.

The season was a dry one; the total rainfall up to the end of August being only 8½ inches. Though this is considerably below average, it came when most needed, and, on account of the cool weather, an inch of rain seems to have been worth more than in a year of greater heat and sunshine. August was a fine warm month, and the crop ripened up quickly. Yields were above average all through Manitoba and on the experimental plots here some unusually high yields were obtained.

SPRING WHEAT.

Only three named varieties of wheat were tested this year. In addition eleven new sorts originated by the Dominion Cerealist were tried out in comparison with the standard varieties, but no public report is being made on them at present. The land used for wheat plots is heavy clay loam, and was summer-fallowed the previous year. Two one-fortieth acre plots of each variety were sown. The date of seeding was April 15 for all plots, and the rate of seeding, 1¾ bushels per acre. The results are shown in tabular form as follows:—

TEST of Varieties.—Wheat.

Number.	Name of Variety.	Date of sowing.	Date of ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average Length of head.	Yield of Straw per Acre.	Yield of Grain per Acre.		Weight per measured bushel after cleaning.
					Inches		Inches.	Lb.	Bu.	lb.	Lb.
1	Marquis	April 15	Aug. 20.	125	48	3	3·5	8,660	62	.	64·0
2	Prelude	" 15	" 12.	117	42	9	1·2	6·230	49	50	64·5
3	Red Fife	" 15	" 24	129	50	1	3·2	10,130	36	50	62·0

FIVE-YEAR Averages.

The average results with these varieties are as follows:—

Variety.	Average No. of days maturing.	Average Yield per acre.	
		Bush.	Lb.
Marquis	108·8	46	35
Red Fife	114·6	36	37
Prelude	98·0	30	17

Marquis has now clearly demonstrated its superiority over Red Fife for most districts in Manitoba. Not only has it surpassed the older variety year after year in these tests, but in practical farm trials it has done equally as well and is now rapidly establishing itself as the main crop of Western Canada. The chief merit of Prelude is its earliness; though it has yielded well in this cool season, it has never done so here before. It is recommended only for districts that are too frosty to grow Marquis. It has faults that make it undesirable where Marquis or Red Fife can be grown successfully.

OATS.

Fifteen varieties of oats were tested this year. Two plots of each variety were sown on land similar to that used for wheat, and similarly prepared. The oats were sown on April 28 at 2½ bushels per acre. The results were as follows:—

TEST of Varieties.—Oats.

Number.	Name of Variety.	Date of sowing.	Date of Ripening.	Number of days maturing.	Average Length of Straw including head.	Strength of Straw on a scale of 10 points.	Average Length of head.	Yield of Straw per Acre.	Yield of Grain per Acre.		Weight per measured bushel after cleaning.
					Inches		Inches..	Lb.	Bu.	lb.	Lb.
1	Orloff	April 28	Aug. 13..	107	46	0	7·0	7,385	141	1	36·5
2	Ligowo	" 28	" 25..	119	55	0	8·0	9,315	137	27	40·0
3	Abundance Regenerated	" 28	" 23..	117	57	0	8·5	8,990	136	6	42·0
4	Daubeney	" 28	" 11..	105	46	0	7·0	7,775	135	25	39·5
5	Banner	" 28	" 24..	118	57	0	9·0	9,105	134	19	39·5
6	Gold Rain	" 28	" 22..	116	57	0	8·5	9,430	132	22	42·5
7	Newmarket	" 28	" 24..	118	57	0	8·5	8,650	131	16	39·5
8	Great French Lizo	" 28	" 23..	117	56	0	8·5	8,810	131	16	40·5
9	Twentieth Century	" 28	" 26..	120	56	0	9·0	9,290	130	30	41·7
10	Green Russian	" 28	" 21..	117	54	0	8·0	8,580	130	..	38·7
11	Eighty Day	" 28	" 12..	106	46	0	7·0	6,910	128	24	36·5
12	Victory (Seger)	" 28	" 27..	121	56	0	8·5	9,700	118	28	42·2
13	Swedish Select	" 28	" 25..	119	57	0	8·5	8,340	117	22	41·5
14	Garton's No. 22	" 28	" 23..	117	59	0	9·5	8,850	111	1	42·0
15	O. A. C. No. 72	" 28	" 29.	123	60	0	9·5	8,470	108	33	42·0

These oat plots were all lodged by a heavy storm of wind and rain about July 22. They were uniformly and completely knocked to the ground, and it was therefore impossible to observe any differences in strength of straw. Probably on account of being better filled before getting lodged, the early varieties have shown up usually well in yield.

Great French Lizo is the only new variety in this list. It has been included at the request of one of the best known western seed firms. Siberian is dropped from the list this year, as it has shown no outstanding merit for this climate and has been superseded by O.A.C. No. 72 in the recommendations of the institution (Ontario Agricultural College) which introduced it.

FIVE-YEAR Averages.

Variety.	Average of days Maturing.	Average Yield per Acre.	
		Bush.	Lb.
Gold Rain	104·0	102	17
Banner	105·4	102	17
Twentieth Century	106·6	101	17
Ligowo	106·2	100	9
Orloff	94·4	100	5
Daubeney	95·0	99	3
Victory (Seger)	106·0	98	..
Swedish Select	105·8	97	10
Abundance, Regenerated	105·0	92	29
Newmarket (average of 4 years)	107·7	102	28
Garton's No. 22 (average of 4 years)	107·5	88	19
O. A. C. No. 72 (average of 3 years)	107·3	91	26

It will be observed that there is very little difference in the average yield of the first eight varieties. However, the Banner variety which is the old standard sort in Manitoba is not surpassed by any, and may safely be recommended for general use. Gold Rain equals it in average yield, and being a little earlier, has been given first place on this list. It is a very desirable variety of yellow oat. For districts that require an earlier-maturing oat, the Orloff and Daubeney varieties are recommended.

BRANDON.

BARLEY.

Eleven varieties of barley tested this year are reported herewith. In addition, five new sorts originated by the Dominion Cerealist were tried but are not reported upon, until more thoroughly tested. The barley plots were on heavy clay loam which produced a crop of potatoes the previous year. May 11 was the date on which all the plots were sown, and the rate of seeding was 2 bushels per acre. The results are reported in tabular form as follows:—

TEST of Varieties.—Barley.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average Length of Straw including Head.	Strength of Straw on a scale of 10 points.	Average Length of head.	Yield of Straw per Acre.	Yield of Grain per Acre.		Weight per measured bushel after cleaning.
					Inches		Inches.	Lb.	Bu.	lb.	Lb.
1	Gold (2-row).............	May 11	Aug. 14..	95	31	8	3·2	3,670	84	38	55·0
2	Garton's No. 68 (6-row)...	" 11	" 10..	91	39	8	3·0	5,435	83	42	51·0
3	Mensury (6-row)...........	" 11	" 10..	91	39	9	3·0	4,895	78	41	49·0
4	Manchurian (6-row).......	" 11	" 11..	92	39	10	3·2	5,105	77	19	49·0
5	Guymalaye (Guy Mayle) (6 row).......	" 11	" 11..	92	33	2	2·5	5,200	72	24	53·0
6	Success (6-row)...........	" 11	" 8..	89	39	6	3·0	4,450	69	38	50·0
7	Swedish Chevalier (2-row)	" 11	" 17..	98	41	6	3·2	5,080	67	24	52·0
8	Canadian Thorpe (2-row)..	" 11	" 15..	96	38	8	2·7	4,905	66	7	52·0
9	Odessa (6-row)...........	" 11	" 11..	92	39	10	3·0	4,660	61	32	49·0
10	O. A. C. No. 21 (6-row)...	" 11	" 13..	94	39	6	3·0	5,390	58	26	49·5
11	Beaver (2-row)...........	" 11	" 14..	95	46	8	5·5	5,340	47	42	48·0

Gold is an unusually productive two-rowed variety, originated at the Svalöf station in Sweden. It is very short in the straw and comparatively strong for a two-row variety. Garton's No. 68 and Mensury or Manchurian, which are practically identical, are the varieties of six-row barley which have done best here, not only this year, but for several years. They are recommended for general use.

Mansfield, a variety tested here for many years, has been discarded on account of comparing unfavourably in point of yield with the best sorts. Brewer has been dropped for very weak straw.

FIVE-YEAR Averages.

Variety.	Average strength of Straw.	Average No. of days maturing.	Average Yield per acre.	
			Bush.	Lb.
Mensury..............................	Fairly strong...............	87·6	74	7
Manchurian...........................	Strong.....................	88·8	72	20
Gold.................................	Medium.....................	95·0	71	23
O. A. C. No. 21......................	Fairly strong...............	87·4	66	37
Odessa...............................	Fairly strong...............	89·2	62	33
Canadian Thorpe......................	Medium.....................	95·2	60	34
Swedish Chevalier....................	Very weak..................	98·2	60	3
Beaver...............................	Fairly strong...............	93·2	46	35
Garton's No. 68 (Average of 4 years).....	"	88·7	76	9
Guymalaye (Guy Mayle) (Average of 4 years)............................	"	87·5	58	41
Success (Average of 4 years).............	"	84·2	55	42

FLAX.

Nine varieties of flax were tested this year. The land used is a sandy loam and was summer-fallowed the previous year. The flax was sown on May 1, at the rate of one-half bushel per acre. The results are as follows:—

Test of Varieties.—Flax.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Plants.	Yield of Seed per acre.		Weight per measured bushel after Cleaning.
					Inches.	Bu.	lb.	Lb.
1	Primost	May 1.	Aug. 11..	102	29	31	11	55·0
2	La Plata	" 1..	" 23..	114	19	31	11	55·0
3	Golden	" 1..	" 24..	115	18	29	26	55·0
4	Novelty	" 1.	" 19..	110	26	28	27	54·5
5	N. D. R. No. 52	" 1.	" 16.	103	27	28	2	55·0
6	N. D. R. No. 73	" 1	" 17..	108	27	27	42	55·0
7	N. D. R. No. 114	" 1	" 15..	106	27	25	50	56·0
8	Common	" 1	" 13..	104	29	24	26	56·0
9	Longstem	" 1.	" 16..	107	44	17	38	54·0

Novelty and Longstem are two new varieties from the Dominion Cerealist. the latter is selected specially for length of stem for fibre production.

Three-Year Averages.

Seven of these varieties have been grown for three years with the following average results:—

Variety.	Average days Maturing.	Average Yield per Acre.	
		Bush.	Lb.
N. D. R. No. 52	99·7	22	38
Primost	100·3	22	20
N. D. R. No. 114	98·7	21	46
N. D. R. No. 73	100·7	21	44
La Plata	108·3	20	46
Golden	109·7	19	31
Common	99·0	17	38

N. D. R. No. 52, originated at the North Dakota Agricultural College, has given the best average results, is a good variety in every way and is highly recommended. Primost has given very nearly as good results, and is also recommended.

PEAS.

Eight varieties of field peas were tested this year. They were sown on April 15. The soil is sandy loam and was summer-fallowed the previous year. The rate of seeding varied from 1¾ to 2½ bushels per acre, depending on the size of the peas. The following are the results obtained:—

TEST of Varieties.—Peas.

Number.	Number of Variety	Size of Pea.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Straw.	Average Length of Pod.	Yield of Grain per Acre.		Weight per measured bushel after Cleaning.
						In.	In.	Bu.	lb.	Lb.
1	Prince	Medium	April 15	Aug. 23	130	48	2·0	59	20	61·0
2	Prussian Blue	"	" 15	" 23	130	52	2·0	57	20	62·0
3	Golden Vine	Small	" 15	" 23	130	50	2·0	57	10	61·0
4	Mackay	Medium	" 15	" 24	131	4[illegible]	2·0	55	90	61·0
5	Chancellor	Small	" 15	" 22	129	44	2·0	52	10	60·5
6	English Gray	Medium	" 15	" 23	130	49	2·5	52	..	61·0
7	Arthur	Large	" 15	" 20	127	32	2·5	45	..	61·0
8	Solo	Medium	" 15	" 21	128	46	2·5	44	40	62·0

FIVE-YEAR Averages.

These varieties have all been grown for at least five years. The average results for that period are as follows:—

Variety.	Average No. of Days Maturing.	Average Yield per Acre.	
		Bush.	Lb.
Prince	120·6	44	51
Mackay	121·0	43	50
Solo	117·4	43	16
Prussian Blue	119·8	43	1
English Gray	121·2	40	24
Chancellor	118·6	39	24
Golden Vine	120·2	38	54
Arthur	114·6	38	51

Prince and Mackay are practically identical; they are the heaviest yielders but are somewhat late. Arthur, though the lightest yielder on the average, is desirable for heavy, rich land, on account of its earliness and its short straw.

INFLUENCE OF ENVIRONMENT ON SEED OATS.

The experiment that has been conducted for a number of years in co-operation with three American Experiment Stations in regard to the influence on seed oats of the climate in which they are grown, has been continued. Oats, originally of the same stock, but grown since 1911 at the four places indicated, were sown here side by side. The results this year were as follows:—

Name of Variety.	Date of Sowing.	Date of Ripening.	No. of Days Maturing.	Average length of Straw including Head	Strength of Straw on a scale of 10 points.	Average Length of Head.	Yield of Grain per Acre.		Weight per measured bushel after cleaning.
				In.		In.	Bush.	lb.	Lb.
Swedish Select (Brandon Seed)....	April 28..	Aug. 25..	119	57	0	8·5	117	22	41·5
Swedish Select (Ohio Seed)......	" 28..	" 23..	117	54	0	8·0	117	12	41·5
Swedish Select (Wisconsin Seed)..	" 28..	" 24..	118	54	0	8·0	116	16	41·5
Swedish Select (South Dakota)...	" 28..	" 22..	116	53	0	8·0	110	..	41·5

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

W. H. GIBSON, B.S.A., SUPERINTENDENT.

THE SEASON.

Generally speaking the season of 1915 was favourable to the production of maximum cereal crops. The spring opened early, with the land in good tilth, and seeding commenced on April 6. Sufficient rain fell throughout May and June to keep the grain crop growing steadily throughout the season.

During the past season tests were made of the following cereal crops: Fifteen varieties of spring wheat, fourteen varieties of oats, twenty varieties of barley, eight varieties of field peas, and three varieties of flax.

WINTER WHEAT.

One plot of winter wheat was sown August 29. The entire plot winter-killed.

SPRING WHEAT.

Fifteen varieties, including eleven unnamed sorts, were sown April 14, in plots one-fortieth of an acre each, at the rate of 1½ bushels per acre. Only the named varieties are recorded here.

Spring Wheat.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average Length of Straw including Head.	Strength of Straw on a Scale of 10 points.	Average Length of Head.	Yield of Grain Per Acre.	Yield of Grain Per Acre.		Weight per Measured Bushel after Cleaning.
					In.		In.	Lb.	Bush.	lb.	Lb.
1	Marquis............	April 14	Aug. 21	129	47	10	3·0	3,880	64	40	63·4
2	Pioneer........	“ 14	“ 20	128	44	6	2·5	2,980	49	40	62·5
3	Prelude.............	“ 14	“ 12	120	43	10	2·2	2,860	47	40	63·5
4	Red Fife...........	“ 13	“ 31	140	41	10	2·7	2,220	37	.	62·1

OATS.

Fourteen varieties of oats were sown in 1915 on land that had been summer-fallowed the previous year. Seeded April 29 in plots one-fortieth of an acre. Rate of seeding 2 bushels per acre.

OATS.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average Length of Straw including Head.	Strength of Straw on a Scale of 10 points.	Average Length of Head.	Yield of Grain Per Acre.	Yield of Grain Per Acre.		Weight per Measured Bushel after Cleaning.
					In.		In.	Lb.	Bush.	lb.	Lb.
1	Eighty Day..........	April 29	Aug. 10	103	42	10	6·5	5,040	148	8	35·5
2	Gold Rain...........	" 29	" 20	113	53	7	7·0	5,000	147	2	42·4
3	Daubeney............	" 29	" 16	109	43	10	6·0	4,900	144	4	38·0
4	Danish Island	" 29	" 23	116	52	8	8·0	4,880	143	18	40·0
5	Victory.............	" 29	" 22	115	55	9	8·0	4,640	136	16	42·0
6	Twentieth Century..	" 29	" 22	115	54	9	8·5	4,640	136	16	41·1
7	Swedish Select.....	" 29	" 22	115	52	9	7·5	4,400	129	14	41·1
8	O .A. C. 72..........	" 29	" 22	115	55	10	9·0	4,400	129	14	38·8
9	French Lizo.........	" 30	" 19	112	56	7	9·0	4,360	128	8	40·4
10	Banner..............	" 29	" 22	115	52	8	7·5	4,280	125	30	41·0
11	Ligowo..............	" 29	" 20	115	51	8	8·0	4,280	125	30	41·1

BARLEY

Twenty varieties, including thirteen of six-row and seven two-row barley, were sown on April 30 at the rate of 2 bushels per acre, on plots one-fortieth of an acre each. The land was summer-fallowed the previous year. Only the named varieties are recorded.

BARLEY.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average Length of Straw including Head.	Strength of Straw on a Scale of 10 points.	Average Length of Head.	Yield of Grain Per Acre.	Yield of Grain Per Acre.		Weight per measured bushel after Cleaning.
					In.		In.	Lb.	Bush.	lb.	Lb.
1	Gold (2 row).......	April 30	Aug. 20	112	33	10	2·7	4,520	94	8	53·4
2	Manchurian (6 row)..	" 30	" 10	102	43	8	2·7	4,300	89	28	47·8
3	O. A. C. 21 (6 row).	" 30	" 19	111.	45	8	2·7	4,280	89	8	51·0
4	Mansfield (6 row) ..	" 30	" 9	101	44	10	2·5	4,200	87	24	51·2
5	Oderbruch (6 row)...	" 30	" 10	102	40	8	2·2	4,000	83	16	53·1
6	Stella (6 row).....	" 30	" 10	102	42	8	2·7	4,000	83	16	48·7
7	Danish Chevalier (2 row)..............	" 30	" 16	108	37	3	3·5	3,640	75	40	51·4
8	Early Chevalier (2 row)...	" 30	" 12	104	44	10	3·2	3,400	70	40	53·0
9	Canadian Thorpe (2 row)...........	" 30	" 16	108	45	8	2·7	3,320	69	8	51·3
10	Swedish Chevalier (2 row)......	" 30	" 24	116	38	8	3·7	3·120	65	..	51·3
11	Standwell (2 row)....	" 30	" 23	116	41	9	2·7	3,000	62	24	51·0
12	Invincible (2 row)....	" 30	" 25	117	41	7	3·2	2,840	59	8	50·1
13	Success (6 row)......	" 30	" 2	94	42	10	2·5	2,120	44	8	46·7

FALL RYE.

Two plots were sown August 29, 1914, and harvested August 3 to 6, 1915.

FALL RYE.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average Length of Straw including Head.	Strength of Straw on a Scale of 10 points.	Average Length of Head.	Yield of Grain Per Acre.	Yield of Grain Per Acre.	
		1914.	1915.		In.		In.	Lb.	Bush.	lb.	Lb.
1	Fall Rye (Sask)...	Aug. 29	Aug. 6	342	50	7	3·2	2,660	47	48	59·0
2	North Dakota No. 959........	" 29	" 3	339	50	8	3·5	2,400	42	48	59·0

FIELD PEAS.

Eight varieties were sown on April 15 on summer-fallowed land, in plots of one-fortieth of an acre each.

PEAS.—Test of Varieties.

Number.	Name of Variety.	Sise of Pea.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average length of Straw.	Average length of Pod.	Yield of Grain per Acre.	Yield of Grain Per Acre.		Weight per measured bushel after Cleaning.
						In.	In.	Lb.	Bu.	lb.	Lb.
1	Solo...............	Large....	April 15	Aug. 31	138	48	2·5	3,280	54	40	62·4
2	Prince..........	Large....	" 15	Sept. 5	143	52	2·5	3,200	53	20	63·6
3	Prussian Blue......	Medium....	" 15	" 4	142	43	2·2	3,040	50	40	63·3
4	MacKay......	Large.......	" 15	" 5	143	45	2·5	3,000	50	..	63·7
5	Golden Vine.......	Small.......	" 15	Aug. 30	137	46	2·5	2,920	48	40	65·0
6	English Grey......	Large.......	" 15	Sept. 4	142	48	2·0	2,800	46	40	62·0
7	Arthur............	Medium.....	" 15	" 3	141	50	2·5	2,760	46	..	63·8
8	Chancellor.........	Small......	" 15	Aug. 31	138	49	2·2	2,760	46	..	64·2

FLAX.

Three varieties were sown on May 28 on fallow land, in plots of one-fortieth acre each.

FLAX.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Plants.	Yield of Seed per Acre.	Yield of Seed per Acre.		Weight per measured bushel after Cleaning.
					In.	Lb.	Bush.	Lb.	Lb.
1	Premost	May 28	Sept. 15	110	23	1,280	22	48	55·8
2	Novelty	" 28	" 20	114	24	1,160	20	40	54·2
3	Longstem	" 28	" 25	120	35	720	12	48	55·0

SHIPMENTS TO OTTAWA.

The following shipment of seed grain was made to the Dominion Cerealist, Ottawa:

	Lb.
Wheat—	
Marquis Ottawa 15	600
Marquis	6,600
Prelude	1,440
Pioneer	720
Red Fife	1,200
Oats—	
Banner	4,760
Ligowo	2,720
Victory	1,360
Barley—	
Manchurian	6,720
O. A. C. No. 21	1,440
Arthur Peas	6,000
Fall Rye	224
	33,784

EXPERIMENTAL FARM, ROSTHERN, SASK.

WM. A. MUNRO, B.A., B.S.A., SUPERINTENDENT.

THE SEASON.

A comparison of the precipitation of the season of 1915 with that of the four previous seasons might explain some of the discrepancies in yield.

PRECIPITATION, in inches.

Month.	1911	1912	1913	1914	1915
March	1·50	0·60	0·36	0·55	0·00
April	0·86	0·67	0·26	0·63	0·30
May	2·38	2·15	1·26	1·96	1·15
June	3·55	2·81	1·87	2·00	1·00
July	2·89	5·25	1·51	1·40	3·12
August	1·79	2·15	2·12	1·12	0·28
Total	12·97	13·63	7·37	7·66	5·85

This table does not show the full effect of the low total precipitation because of the way it was distributed. There were only two showers that wet the ground to a depth of 2 inches, and in most cases the showers were so distributed as to be dried off in a few hours. Added to the low precipitation is the damage done by frost on June 7, 14, and 16, a temperature of 24·2 degrees being reached on the last date. This froze all cereals to the ground.

SPRING WHEAT.

Following are the yields per acre for 1915 of the principal varieties of wheat, together with the yields for each of the previous four years and the number of days maturing in 1915. These grains were sown on April 21 on summer-fallow, and the yields are computed from the weight of grain on one-fortieth of an acre:—

Variety.	1911		1912		1913		1914		1915		1915
	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Days maturing.
Huron	73	20	40	40	45	20	45	40	45	20	124
Red Fife	60	..	27	20	36	..	43	10	45	10	125
Marquis	70	..	43	20	54	..	45	20	43	30	122
Bobs	62	..	36	.	57	20	51	20	41	30	122
Pioneer	....		23	40	36	.	42	..	32	20	122
Prelude	....		29	20	24	..	31	20	22	40	112
Kubanka	....		....		16	40	44	40	43	..	126

The average yield of Marquis wheat on 8 acres of fallow in 1915 was 34 bushels, 11 pounds, and on 6 acres of fall ploughed wheat stubble was 17 bushels 19 pounds. Two acres of Marquis wheat on fall-ploughed corn ground that had been fallowed and manured preceding the corn yielded at the rate of 39 bushels 52 pounds.

EMMER.

One plot of emmer was tried in 1915 for the first time and yielded at the rate of 2,680 pounds per acre, which at sixty pounds per bushel is 44 bushels and 40 pounds. But it must be remembered that a considerable percentage of this weight is made up of chaff, and that therefore the yield is below that of a standard variety of wheat.

OATS.

Following are the yields of the leading varieties of oats for the past five years. O.A.C. 72 is a variety recently brought out by Professor Zavitz of the Ontario Agricultural College and, during the past two years, has proved a high yielder at this Station. It is late in maturing.

Variety.	1911		1912		1913		1914		1915		1915
	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Days maturing.
Victory	109	14	83	18	143	18	82	32	113	28	121
O.A.C. 72	......		......		......		97	22	107	22	121
Banner	131	26	70	20	145	30	73	18	105	20	121
Twentieth Century	128	8	68	8	132	32	74	24	102	32	121
Ligowo	121	6	69	14	108	8	80	3	102	12	120
Eighty Day	......		63	18	102	12	75	20	88	18	112
Abundance	125	30	94	4	132	32	77	22	87	22	121
Daubeney	101	6	68	8	98	28	68	28	77	2	112

The average yield of Banner oats on 6 acres of fall-ploughed stubble land was 35 bushels 8 pounds.

ROSTHERN.

BARLEY.

Nineteen varieties of barley were under test this year, including four new promising varieties introduced by Dr. Chas. Saunders. Following are the results of the highest yielders, together with a record of their yields during the past four years.

Variety.	1911		1912		1913		1914		1915		1915
Six-row Varieties.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Days maturing.
O.A.C. 21	94	8	57	4	73	16	75	..	67	24	111
Manchurian	96	32	55	40	....		67	24	74	28	111
Black Japan	93	16	70	40	58	16	67	24	74	28	116
Taganrog	81	32	59	8	53	16	67	4	57	24	109
Odessa	100	40	44	8	46	32	67	4	62	24	111
Stella	83	16	49	8	50	40	66	12	82	44	111
Success	....		49	8	31	32	32	36	43	36	107
Early Indian	....		....		11	32	45	40	32	20	111
Two-row Varieties.											
Swan's Neck	78	16	66	32	74	8	77	4	70	..	112
Duckbill	80	16	61	32	67	24	66	42	53	16	118
Early Chevalier	79	8	54	28	65	..	54	28	56	12	109
Swedish Chevalier	71	32	55	40	56	22	53	16	72	44	118
Beaver	70	40	38	15	46	32	45	20	40	40	112

In 1911, O.A.C. 21 came second to Manchurian in point of yield, and in 1912 it was second to Black Japan, while in 1913 it was second to Swan's Neck. Even though eighth this year it is still the highest in all the barleys for the average of five years.

Two acres of O.A.C. 21 barley on root ground yielded 43 bushels 11 pounds per acre.

PEAS.

It is difficult to determine the comparative merits of peas in small plots because of the tendency to shell in the process of harvesting. Notwithstanding the discrepancy of comparative yields during the past five years, the Arthur pea is the one recommended above the others, not only because it is nearly as high a yielder as the others, but it is earlier and is the only one that has not been caught by the frost before ripening in a season of early frosts.

ROSTHERN.

EXPERIMENTAL STATION, SCOTT, SASK.

MILTON J. TINLINE, B.S.A., ACTING SUPERINTENDENT.

WEATHER.

The season of 1915 was particularly suitable for testing cereal crops and also for the production of heavy yields. All conditions were favourable, the rains during the preceding autumn had penetrated to a considerable depth, and the frost during the winter had followed the moisture down. The gradual thawing out of the moist soil during the early summer, together with the copious June rains, provided an abundant supply of moisture for plant growth.

Seeding was general by April 13, which was one day earlier than the average. Favourable spring weather, together with the increased area prepared for crop the preceding autumn, facilitated seeding operations, so that a larger acreage than usual was sown in seasonable time.

The weather during May, June, and July was cooler than usual. In some sections frosts as late as June 16 froze the crop almost to the ground, but, owing to the abundant supply of moisture, the crops rapidly recovered from this set-back, and made an extremely quick growth. Commencing on August 3, warm, dry weather was experienced, which caused the crops to ripen in good season.

Satisfactory weather conditions permitted rapid progress with harvesting and threshing, with the result that the most profitable cereal crop ever harvested in northwestern Saskatchewan was saved in first-class condition.

TEST OF VARIETIES.

The cereal tests conducted during the past season included five named varieties of wheat, five hybrid wheats received from the Dominion Cerealist, nine varieties of oats, seven of barley, five of field peas, three of flax, and one of spring rye.

In order to check up possible experimental errors, all tests were made in duplicate.

The field on which the tests were carried out, was summer-fallowed in 1914. The soil was a dark chocolate clay loam. All plots were one-fortieth of an acre in area.

SPRING WHEAT.

Five named varieties of spring wheat were sown on April 13. Seed was used at the rate of 1¾ bushels per acre.

The Red Fife lodged badly in both tests, while the Marquis stood up well on adjoining plots.

It will be noted that the Prelude yielded almost equally well with the Pioneer and ripened earlier. The latter variety was attacked by rust earlier in the season, which decreased the yield and affected the quality of the grain.

Spring Wheat.—Test of Varieties.

Number.	Name of variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inches		Inches	Lb.	Bu.	lb.	Lb.
1	Marquis	April 13	Aug. 21	130	51·0	8	3·1	3,100	51	40	64·5
2	Huron	" 13	" 21	130	51·0	9	3·1	3,010	50	10	62·4
3	Red Fife	" 13	" 27	136	57·0	6	3·5	2,790	46	30	62·8
4	Pioneer	" 13	" 17	126	49·0	6	2·7	2,250	37	30	63·0
5	Prelude	" 13	" 12	121	43·0	9	2·0	2,110	35	10	65·0

OATS.

Nine varieties of oats were sown on April 27. The seed was used at the rate of 2½ bushels per acre.

The Victory has, for the third time on this Station, headed the list in yield of grain per acre. The Twentieth Century and Ligowo are almost equal in the four-year averages. The former is rather coarse in the straw and has a fairly high percentage of hull. The Ligowo has been recommended by the Dominion Cerealist, for northwestern Saskatchewan; it is usually a little earlier maturing than most of the very heavy yielding sorts. The kernel is short and plump, and this season this variety weighed 3½ pounds more per measured bushel than any of the others under test. The straw of the Ligowo is fine, but not so strong as the straw of the Banner. The Abundance variety was dropped from the tests as past experiments have proved this oat to be inferior in point of yield.

In the seed plots, where Ligowo, Victory, and Banner were grown under field conditions, a special strain of the Ligowo was used, with the result that Ligowo gave the heaviest yield, with Victory second, and Banner third.

Oats.—Test of Varieties.

Number.	Name of variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inches		Inches	Lb.	Bu.	lb.	Lb.
1	Victory	April 27	Aug. 21	116	63·5	8	8·0	4,250	125	..	40·8
2	Twentieth Century	" 27	" 21	116	62·5	8	8·0	4,230	124	14	39·8
3	Gold Rain	" 27	" 21	116	65·2	8	7·7	4,110	120	30	40·0
4	Banner	" 27	" 23	118	64·7	9	9·2	4,070	119	24	39·0
5	Ligowo	" 27	" 21	116	63·2	7	7·7	4,010	117	2	42·4
6	Eighty Day	" 27	" 12	107	54·5	4	6·5	3,920	115	10	37·0
7	Great French Liso	" 27	" 21	116	62·7	6	7·2	3,860	113	18	40·6
8	Tartar King	" 27	" 23	118	61·3	7	8·8	3,860	113	18	40·6
9	Daubeney	" 27	" 12	107	55	6	7	3,800	111	26	35·5

Scott.

BARLEY.

Barley, owing to the light yields so frequently secured, has not proved to be a popular crop in this district. The inferior yields are due, in part, to the practice of using barley as a cleaning crop and, in part, to the land being new and soddy.

Four varieties of six-row, and three of two-row were sown on April 27 and 28. The seed was used at the rate of 2 bushels per acre.

The Black Japan, while heavy yielding on summer-fallow, has not been tested out on spring or fall ploughing. The O.A.C. No. 21 is first in an average for four years, and, with the variety Manchurian, is usually recommended for the west. Success is a beardless variety, but is inferior in point of yield.

Of the two-row type, Duckbill is one of the most satisfactory, giving a heavy yield and weighing well per measured bushel. The Early Chevalier lodged comparatively early in the season, consequently some difficulty was experienced in harvesting.

Barley.—Test of Varieties.

Number.	Name of variety.	Date of sowing.	Date of ripening.	No. of days maturing.	Average length of straw including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.	Weight per measured bushel after cleaning
					Inches.		Inches.	Lb.	Bu. lb.	Lb.
1	Black Japan, 6-row...	April 28	Aug. 16	110	45	9	2·5	3,545	73 41	50·0
2	Duckbill, 2-row......	" 28	" 16	110	56	9	3·2	3,320	69 8	52·9
3	O.A.C. No. 21, 6-row.	" 27	" 16	111	57	6	3·0	3,130	65 10	50·8
4	Manchurian, 6-row....	" 27	" 16	111	57	6	3·0	2,970	61 42	49·5
5	Early Chevalier, 2-row..............	" 28	16	110	52	5	3·0	2,890	60 10	52·1
6	Brewer, 2-row........	" 28	" 16	110	50	6	3·1	2,770	57 34	50·0
7	Success, 6-row......	" 27	" 7	102	48	9	3·0	2,510	31 22	48·2

FIELD PEAS.

Five varieties of peas were sown on April 28. Amounts of seed used varied from 2¾ to 3½ bushels per acre, depending on the size of the individual peas.

The Arthur variety headed the list this year, and is first in an average of four years. This variety is an early maturing, medium-sized, white pea.

Peas.—Test of Varieties.

Number.	Name of variety.	Size of pea.	Date of sowing.	Date of ripening.	Number of days maturing.	Average length of plants.	Average length of pod.	Yield of seed per acre.	Yield of seed per acre.	Weight per measured bushel after cleaning.
						Inches.	Inches.	Lb.	Bu. lb.	Lb.
1	Arthur................	Medium	April 28	Sept. 10	135	36	2·0	3,290	54 50	65·3
2	Prussian Blue..........	"	" 28	" 14	139	62	2·5	2,890	48 10	65·7
3	English Grey..........	"	" 28	" 14	139	56·5	2·2	2,880	48 ..	64·2
4	Chancellor.............	Small	" 28	" 10	135	51	2·0	2,830	47 10	66·0
5	Golden Vine...........	"	" 28	" 12	137	46	1·7	2,710	45 10	66·0

Scott.

SPRING RYE.

Spring rye (Ottawa Select) was sown on April 13. The crop was headed out by June 16, and was ripe August 17. The average height of the plants, including head, was approximately 5 feet. The yield per acre of threshed grain was 3,220 pounds or 57 bushels and 28 pounds. The strength of the straw was 5, on a scale of 10 points; the average length of the heads was 3·2 inches, and the weight per bushel of the threshed grain was 59·5 pounds.

FALL RYE.

The seed of three varieties of fall rye was secured in the late summer, from the Experimental Station at Sidney, B.C. Duplicate plots, of each, were sown on September 7, on land that had been fallowed during the summer. Notwithstanding the dry autumn, the rye made satisfactory growth, and went into the winter in fairly good condition.

FLAX.

Three varieties of flax were sown on April 29. The seed was used at the rate of 30 pounds per acre.

The two named varieties, Novelty and Longstem, were secured from the Dominion Cerealist. The former is a selection from the Novarossick variety, and was grown at Ottawa for some time under the name of Novarossick B. The Longstem, true to its name, is very tall and is a selection from the Common flax.

FLAX.—Test of Varieties.

Number.	Name of variety.	Date of sowing.	Date of ripening.	Number of days maturing.	Average length of plants.	Yield of seed per acre.	Yield of seed per acre.		Weight per measured bushel after cleaning
					Inches	Lb.	Bu.	lb.	Lb.
1	Common	April 29	Sept. 6	130	26	1,470	26	14	53
2	Novelty	" 29	" 5	129	23	1,450	25	50	53
3	Longstem	" 29	" 7	131	34	1,050	18	42	53

SEED GRAIN.

The following table gives the yield per acre, and number of days required to mature crops grown under comparable conditions for seed purposes:—

Variety.	Number of acres.	Number of days maturing.	Yield of grain per acre.	Yield of grain per acre.	
Wheat.			Lb.	Bush.	lb.
Marquis	10	123	2,197	36	37
Oats.					
Ligowo	5	116	3,111	91	17
Victory	5	117	2,915	85	25
Banner	5	122	2,787	81	33
Barley.					
O. A. C. No. 21	6	101	2,116	44	11
Manchurian	5	103	1,961	40	6

SEED GRAIN SUPPLIED FROM THE SCOTT STATION.

While all the grain grown on the Station during the past year was of excellent quality and free from weed seeds, yet only grain that had been sown on new land and had been carefully rogued in the fields was saved for seed purposes.

The following list includes grain sold to farmers, and amounts supplied the Illustration Stations:—

Variety.	Number of bushels.	Number of farmers supplied.
Wheat.	Bush.	
Marquis	90	13
Oats.		
Banner	133	14
Ligowo	35	7
Victory	25	3
Barley.		
Manchurian	6	2
Peas.		
Arthur	90	10
Total	379	49

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

W. H. FAIRFIELD, M.S., SUPERINTENDENT.

SEASONAL NOTES.

The season of 1915 opened at about the usual time for the district, and from the beginning was most favourable for all kinds of cereals. The soil was in prime condition for seeding in the spring on account of the large amount of moisture carried over from the fall before. Winter wheat, although not grown to such an extent as formerly, came through the winter well and started a strong, vigorous growth which it maintained as is evidenced by the yields reported in the tables following. Seeding operations were not interrupted to any extent by storms during the month of April and were concluded throughout this part of the province in good season. The rains during May, June, and July, although not excessive, came just when needed. There was no period during the whole growing season when grain suffered in any way at all for moisture and the result was that most phenomenal yields were obtained with all the cereals. The first frost in the fall was on September 11 and on the 12th a killing frost occurred, but by this date all kinds of grain crops were well matured.

NO IRRIGATION USED.

On account of the very favourable season none of the grain was irrigated, so, although the varieties were sown on both irrigated and non-irrigated land, the report will not be divided into two parts as has been the custom in the past. On the irrigated land the grain was all lodged badly, which reduced the yields materially in nearly all cases.

EXPERIMENTS WITH WINTER WHEAT.

Ten varieties of winter wheat were sown on summer-fallowed land September 1, 1914. They came through the winter well and gave high yields. The area of each plot was one-sixtieth of an acre.

WINTER WHEAT (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Weight of straw.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning	Average yield for 3 years.	
				Inches.		Lb.	In.	Lb.	Bu.	lb.	Lb.	bu.	lb
1	Dawson's Golden Chaff	Aug. 2	336	47·5	10	6,720	3·2	4260	71	..	62·5	37	40
2	Minnesota No. 529	“ 9	343	52·5	10	6,900	4·2	4140	69	..	64	36	25
3	Kharkov	“ 6	340	46·5	6	6,525	3·5	4035	67	15	65	33	45
4	Minnesota No. 561	“ 6	340	45·5	4	6,315	3·0	3825	63	45	64	39	..
5	Buffum No. 17	“ 6	340	55·5	9	6,930	3·7	3810	63	30	63	36	10
6	Azima	“ 4	338	45·0	5	6,630	2·7	3750	62	30	63	35	5
7	Egyptian Amber	“ 5	339	49·2	7	6,270	4·0	3690	61	30	64	31	..
8	Kansas Red	“ 4	338	42·5	5	6,300	3·2	3660	61	..	64	34	40
9	Tasmania Red	“ 5	339	51·5	6	6,315	3·7	3645	60	45	64·5	29	45
10	Ghirka	“ 3	337	50·0	3	8,370	3·0	3510	58	30	63	33	5

EXPERIMENTS WITH SPRING WHEAT.

Fourteen plots of spring wheat were sown on dry land and six on irrigated land. The wheat on the dry land was sown on summer-fallow on April 12. On the irrigated area the wheat was sown on the same day but on land on which roots had been grown the year previous. No irrigation was given. The area of each plot was one-sixtieth of an acre. It is of interest to note that Kubanka, a macaroni wheat, headed the list in yield. This is rather unusual for until this year the average yield for Kubanka has not been higher than some of the standard varieties, such as Red Fife or Marquis.

Some of the varieties under test have not yet received names. These sorts are omitted from the report.

Spring Wheat (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning	Average yield for 3 years.	
				Inch.		Inches.	Lb.	Bu.	lb.	Lb.	Bu.	lb.
1	Kubanka	Aug. 18	128	53	8	2·5	5,460	91	..	64·5	44	30
2	Red Fife	“ 22	132	51	10	3·5	4,225	70	25	63	40	18
3	Early Red Fife	“ 19	129	52	10	4·0	3,870	64	30	65·5	38	54
4	Marquis	“ 16	126	48	10	3·0	3,795	63	15	65	37	33
5	Huron	“ 18	128	50	10	3·5	3,780	63	..	64·5	42	45
6	Early Russian	“ 24	134	50	9	3·5	3,585	59	45	65·5	37	35
7	Bobs	“ 13	123	44	10	3·5	3,270	54	30	65	37	10
8	Pioneer	“ 13	123	44	10	3·0	2,985	49	45	64	32	35
9	Prelude	“ 6	116	42	10	2·2	2,400	40	..	64·5	20	25

Spring Wheat (Irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning	Average yield for 3 years.	
				Inch.		Inches.	Lb.	Bu.	lb.	Lb.	Bu.	lb.
1	Marquis	Aug. 23	133	53	8	3·5	5,640	94	..	64	66	38
2	Huron	“ 24	134	59	4	3·7	5,160	86	..	62	60	7
3	Prelude	“ 7	117	42	10	2·5	3,600	60	..	65	40	28
4	Red Fife	“ 27	137	51	1	3·	3,180	53	..	61	48	41
5	Pioneer	“ 20	130	47	2	3·0	2,640	44	..	63·5	46	55

EXPERIMENTS WITH OATS.

Eight varieties of oats were tested on the non-irrigated land and five varieties on the irrigated land. The oats on dry land were sown April 15, and on irrigated land April 16. The area of each plot was one-sixtieth of an acre. All of the varieties of oats on the irrigated land were so badly lodged that it was impossible to harvest the crop properly and the yields reported are, therefore, not very reliable. Banner oats went down perhaps worse than any of the others which accounts for its giving the lowest yield on the irrigated land.

OATS (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning	Average yield for 4 years.	
				Inch.		Inches.	Lb.	Bu.	lb.	Lb.	Bu.	lb.
1	Gold Rain	Aug. 15	122	57	10	8·5	5,430	159	24	40	87	26
2	Irish Victor	" 16	123	57	10	7	5,160	151	26	40	85	20
3	Banner	" 14	121	54	10	8	4,860	142	32	38	85	24
4	Victory	" 16	123	54	10	6·5	4,680	137	22	41	87	31
5	Swedish Ligowo	" 15	122	57	10	8	4,590	135	..	39	74	8
6	Danish Island	" 17	124	53	9	7	4,560	134	4	40	85	..
7	Lincoln	" 16	123	53	10	8·5	4,410	129	24	40	76	29
8	Daubeney	" 6	113	42	10	7	4,065	119	19	35	60	34

OATS (Irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning	Average yield for 3 years.	
				Inch.		Inches.	Lb.	Bu.	lb.	Lb.	Bu.	lb.
1	Irish Victor	Aug. 20	126	66	1	8·5	5,100	150	..	37	127	32
2	Gold Rain	" 16	122	65	4	8	4,800	141	6	37	..	..
3	Daubeney	" 7	113	57	1	8	4,500	132	12	34	101	16
4	Danish Island	" 16	122	62	1	8	3,960	116	16	36	116	16
5	Banner	" 15	121	62	1	9	2,760	81	6	39	103	7

LETHBRIDGE.

EXPERIMENTS WITH BARLEY.

Twelve varieties were tested on both dry and irrigated land and were planted in both cases on April 16. On the dry land the varieties were sown on summer-fallow and on the irrigated land on which roots had been grown the previous season. The area of each plot was one-sixtieth of an acre. It will be noticed that the yields are higher on the dry land than on the irrigated land. This was due to the fact that the grain lodged worse on the irrigated land.

Barley (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.		Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head	Yield of grain per acre	Yield of grain per acre.		Weight per measured bushel after cleaning	Average yield for 4 years.	
					Inch.		Inches.	Lb.	Bu.	lb.	Lb.	Bu.	lb.
1	Odessa (6 row).............	Aug.	9..	115	37	2	3	4,650	96	42	51	53	21
2	Mansfield (6 row)...........	"	9..	115	47	8	2·5	4,650	96	42	51	47	46
3	O. A. C. No. 21 (6 row)......	"	5..	111	46	8	3	4,440	92	24	49	46	46
4	Manchurian (6 row)..........	"	5..	111	48	9	3·5	4,155	86	27	48·5	41	38
5	Swedish Chevalier (2 row)..	"	9..	115	40	3	4·5	4,155	86	27	52	50	41
6	Duckbill (2 row)............	"	10..	116	50	10	3	4,110	85	30	54	..	..
7	Invincible (2 row)...........	"	13..	119	45	5	3	4,005	83	21	49	50	15
8	Gold (2 row)...............	"	10..	116	38	3	3·5	3,960	82	24	52	..	..
9	Claude (6 row).............	"	6	112	39	4	2·5	3,795	79	3	49	44	22
10	Clifford (2 row).............	"	5.	111	51	8	4	3,360	70	..	52	39	33
11	Guymalaye (6 row)..........	"	2	108	33	4	2	3,330	69	18	60	37	28
12	Early Chevalier (2 row)......	"	4..	110	45	6	3·7	3,225	67	9	52·5	38	36

Barley (Irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Ripening.		Number of days maturing.	Average length of straw including head.	Average length of head.	Yield of grain per acre.	Yield of grain acre. per		Weight per measured bushel after cleaning	Average yield for 3 years.	
					Inches.	Inches.	Lb.	Bu.	lb.	Lb.	Bu.	lb.
1	Invincible (2 row)............	Aug.	13	119	47	2·5	4,380	91	12	52	89	23
2	O. A. C. No. 21 (6 row).......	"	10	116	51	2·5	4,320	90	..	48	82	9
3	Mansfield (6 row)	"	10	116	54	2·5	4,020	83	36	48·5	76	37
4	Gold (2 row)......	"	13	119	36	3·0	3,900	81	12	51	..	..
5	Swedish Chevalier (2 row)......	"	13	119	46	3·5	3,870	80	30	51	88	6
6	Early Chevalier (2 row)........	"	10	116	47	3·0	3,840	80	..	51	67	32
7	Claude (6 row).............	"	10	116	50	2·5	3,840	80	..	48	90	20
8	Odessa (6 row)...............	"	10	116	48	3·0	3,600	75	..	46	77	30
9	Duckbill (2 row)...............	"	13	119	54	2·5	3,540	73	36	51	..	..
10	Manchurian (6 row)............	"	8	114	52	3·0	3,480	72	24	47	69	41
11	Clifford (2 row)...............	"	7	113	57	2·5	3,240	67	24	49	62	4
12	Guymalaye (6 row)...........	"	3	109	37	2·5	3,210	66	42	57·5	70	..

EXPERIMENTS WITH PEAS.

Nine varieties were tested on both dry and irrigated land. The area of each plot was one-sixtieth of an acre. It will be noted that the yields are particularly satisfactory. Peas are a crop that should be more extensively raised in Alberta than they are. The seed was sown at the rate of 2 bushels to the acre in the case of the small peas and 2½ bushels to the acre in the case of medium to large sized peas. The yields given are of course higher than could be expected in a normal year but after the peas have been grown on land for one season, or if the seed or soil is inoculated, the yields are usually quite satisfactory. The most serious objection to the raising of this crop is the difficulty in harvesting, for on account of our high winds the crop is apt to blow about badly after being cut before being threshed or stacked.

PEAS (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average Length of Straw.	Average Length of Pod.	Yield of Grain per Acre.	Yield of Grain per Acre.		Weight per Measured bushel after Cleaning.	Average yield for 5 years
					In.	In.	Lb.	Bu.	lb.	Lb.	Bu. lb.
1	Mackay	April 12	Aug. 27	137	74	2·7	4,470	74	30	62·5	39–30
2	Prussian Blue	" 12	" 25	135	71	2·7	4,410	73	30	65·0	38–18
3	Solo	" 12	" 21	131	62	2·2	4,140	69	..	62·0	...
4	English Grey	" 12	" 23	133	72	2·2	4,020	67	..	65·0	36–18
5	Chancellor	" 12	" 22	132	63	2·2	3,480	58	..	64·0	32–42
6	Picton	" 12	" 23	133	63	2·2	2,340	39	..	66·0	29–36
7	Prince	" 12	" 25	135	70	2·5	1,995	33	15	64·0	30–27
8	Golden Vine	" 12	" 21	131	71	2·2	1,995	33	15	65·0	27–45
9	Arthur Selected	" 12	" 20	130	46	2·5	1,740	29	..	66·0	27–36

PEAS.—(Irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Straw.	Average Length of Pod.	Yield of Grain per Acre.	Yield of Grain per Acre.		Weight per measured bushel after Cleaning.	Average yield per acre for 5 years.
					In.	In.	Lb.	Bu.	lb.	Lb.	Lb.
1	Prince	April 12	Aug. 28	138	75	1·7	4,560	76	..	65·5	60–12
2	Picton	" 12	" 27	137	70	2·5	4,095	68	15	66·0	52–42
3	Golden Vine	" 12	" 27	137	65	2·2	3,405	56	45	67·0	48–39
4	Arthur Selected	" 12	" 21	131	66	2·5	3,285	54	45	66·0	44–51
5	English Grey	" 12	" 25	135	86	2·7	2,475	41	15	65·0	48–9
6	MacKay	" 12	" 26	136	76	2·0	2,400	40	..	67·0	50–16
7	Prussian Blue	" 12	" 27	137	78	1·7	2,355	39	15	65·0	47–15
8	Solo	" 12	" 22	132	108	2·0	2,265	37	45	66·5	.....
9	Chancellor	" 12	" 22	132	90	2·0	1,980	33	..	65·0	41–48

EXPERIMENTS WITH FLAX.

Five varieties of flax were sown on summer-fallow on non-irrigated land. The area of each plot was one-sixtieth of an acre.

Flax (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Plants.	Yield of Seed per Acre.	Yield of Seed per Acre.	Weight per measured bushel after Cleaning.
					In.	Lb.	Bush. Lb	Lb.
1	Common	May 21.	Sept. 3..	105	30	1,740	31 4	54·5
2	S.J. 30 Mocassin (Montana)	" 21..	" 3..	105	30	1,380	24 36	56·0
3	Longstem	" 3..	" 4	124	37	1,200	21 24	54·0
4	Golden	April 15..	" 1..	139	34	1,140	20 20	55·5
5	Novelty	May 3..	" 2..	122	32	990	17 38	54·0

EXPERIMENTS WITH RYE.

A plot of winter rye sown September 1, 1914, and spring rye on April 15, 1915, The yields, as will be noted, are particularly high. In this connection it might not be out of place to say that our usual results with spring rye, so far as yield is concerned, have not been particularly satisfactory. Spring rye is often planted by newcomers for green feed, it being selected because it can be sown late. Our experience has been that oats will produce even more green feed than will the spring rye. On the other hand winter rye does particularly well for green feed. When sown on summer-fallow about the first of September it comes on early and produces considerable crop in very dry seasons.

Rye (Non-irrigated).—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Average Length of Plants.	Yield of Seed per Acre	Yield of Seed per Acre.	Weight per measured bushel after Cleaning.
				In.	Lb.	Bush. Lb.	Lb.
1	Winter Rye	Sept. 1 '14	Aug. 2..	65	3,630	64 46	56·0
2	Spring Rye	Apl. 15 '15	" 16.	56	3,000	53 32	51·6

EXPERIMENTAL STATION FOR CENTRAL ALBERTA.

G. H. HUTTON, B.S.A., SUPERINTENDENT.

THE SEASON.

The season of 1915 was a favourable one for the production of large yields of grain. No frosts being registered until September 13, ample time was allowed for each variety of grain to ripen and give the best possible account of itself. The peculiarly favourable season may show some varieties of grain to be very heavy yielders which would not be suited to the average season in central Alberta. The seeding of the variety test plots was commenced April 10, the weather being warm and bright and the soil in a fine state of tilth. The rainy season commenced in May and lasted throughout June. The precipitation for the five months, April to September, was 14·26 inches. This abundant rainfall followed by warm, dry weather in July and August caused a luxuriant growth that came to full maturity, with the exception of a few plots which lodged. The latest cereal plots were harvested on August 31, with the exception of several plots of peas which were cut September 10. The grain from all plots was threshed by September 30, and stored in good condition.

SPRING WHEAT.

Fifteen varieties of spring wheat were sown in uniform test plots one-fortieth acre in size, on April 10. The land had previously grown roots and was thoroughly disced and harrowed in preparation for the seed which was sown at the rate of from 2¾ to 3¼ bushels per acre. Heavy seeding has been found profitable on heavy black loam soil, since ripening is hastened and the proportion of straw reduced. Only the named varieties are mentioned in the table.

WHEAT.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of Days Maturing.	Average Length of straw including head.	Strength of straw on a scale of 10 points	Average Length of Head.	Yield of Grain per Acre.	Yield of Grain per Acre.		Weight per measured bushel after cleaning.
					In.		In.	Lb.	Bu.	Lb.	Lb.
1	Bobs...............	April 10	Aug. 28	140	52·5	10	4·5	4,693	78	13	62·2
2	Bishop.............	" 10	" 28	140	58·5	6	3·2	4,220	70	20	64·0
3	Huron..............	" 10	" 28	140	56·0	10	4·2	4,220	70	20	63·0
4	Early Russian.......	" 10	" 28	140	61·0	4	4·2	4,080	68		62·9
5	Marquis............	" 10	" 30	142	52·0	10	3·7	3,535	58	55	62·0
6	Red Fife............	" 10	" 30	142	57·0	9	4·0	3,530	58	50	63·0
7	Pioneer............	" 10	" 25	137	47·5	9	4·2	2,840	47	20	63·2
8	Prelude............	" 10	" 14	126	48·5	10	2·5	2,680	44	40	64·0

SPRING WHEAT.—Test of Varieties.—Four-year Average.

Variety.	No. of days maturing.	Yield per acre.	
		Bush.	Lb.
Bishop	144	59	30
Huron	144	57	22
Bobs	143	57	21
Red Fife	143	55	45
Early Russian	144	55	45
Marquis	141	49	44
Pioneer, (3 years)	142	41	13
Prelude	130	39	10

Marquis, although not occupying a prominent place in the list of spring wheats when they are arranged in the order of their yields, has qualities that make it superior to the other varieties of wheat. Maturing earlier than Red Fife, it is equal to it in milling value, and grows in the field with a perfect strength of straw. The grain is clean, plump, and weighs well per measured bushel, and is not at all liable to rust or smut. Marquis can therefore be recommended for all districts where the season is sufficiently long to allow it to mature. Where an earlier wheat is desired, Prelude should be grown as it ripens about fourteen days earlier than Marquis, and has good milling value. Prelude is a bearded wheat and yields from ten to fifteen bushels less grain per acre than Marquis.

SPRING WHEAT.—Field lots suitable for seed.

Variety.	Area.	Total yield.		Yield per acre.	
	Acres.	Bush.	lb.	Bush.	lb.
Marquis	6·98	395	45	56	10
Prelude	4·3	110	..	25	35

FALL WHEAT.

Field six on rotation "L" was broken from sod in July and seeded to Kharkoff winter wheat on August 12, 1914. A splendid crop of wheat was cut August 27, 1915, that yielded 36·7 bushels of grain per acre.

SPRING RYE.

One plot of spring rye was sown on April 10, at the rate of 3 bushels per acre, on land that had previously grown roots. This plot was cut August 31, and yielded at the rate of 58 bushels and 20 pounds to the acre.

LACOMBE.

EXPERIMENTS WITH OATS.

Seventeen varieties of oats were planted April 12, on black loam soil that was in roots the year before. Seed was used at the rate of 3½ to 4 bushels per acre. None of the numbered varieties of oats yielded above those reported on in the following table:—

OATS—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					In.		In.	lb.	Bu.	lb.	Lb.
1	Swedish Select	April 12	Aug. 22	132	61	10	8·2	4,900	144	4	43·1
2	Victory	" 12	" 23	133	60	10	8·2	4,880	143	18	44·2
3	Irish Victor	" 12	" 22	132	64	10	9·2	4,420	130	..	42·0
4	Banner	" 12	" 26	136	61	10	10·7	4,253	125	3	43·1
5	O. A. C. 72	May 5	" 30	117	68	10	9·0	4,180	122	32	40·8
6	Ligowo	April 12	" 23	133	64	9·5	10·5	4,040	118	28	41·8
7	Tartar King	" 12	" 23	133	60	10	11·7	3,980	117	2	40·3
8	Little Gem	" 12	" 15	125	50	10	5·7	3,910	115	..	37·8
9	Danish Island	" 12	" 24	134	61	10	10·0	3,860	113	18	42·3
10	Great French Lizo	" 19	" 23	126	64	9	9·0	3,790	111	16	42·3
11	Gold Rain	" 12	" 23	133	67	10	9·0	3,770	110	30	44·2
12	Daubeney	" 12	" 19	129	56	9·5	9·7	3,640	107	2	39·1
13	Eighty Day	" 12	" 15	125	52	10	6·2	3,510	103	8	38·0

OATS. Test of Varieties.—Five-year averages.

Variety.	No. of days maturing.	Yield per acre.	
		Bu.	lb.
Victory	139	110	22
Irish Victor	137	108	18
Banner	138	105	15
Abundance	139	97	30
Daubeney (4 yr.)	129	97	2
Tartar King	136	94	1
Danish Island	136	93	6
Swedish Select	135	93	.
Gold Rain (3 yr.)	135	84	27
Ligowo (4 yr.)	137	82	30
Eighty Day (4 yr.)	124	71	4

CROSS SOWING.

A new drill with runs 3 inches apart is being placed on the market and the claim made that greater yields of grain can be secured from an acre when sown with the same quantity of seed from this drill than from the common drill with runs 6 or 7 inches apart. A test was made this year of cross sowing which should amount to about the same thing as using one of the new drills. A plot was sown first lengthwise and then crosswise with a drill having runs 7 inches apart, using the same amount of seed on this plot as on one that was seeded singly. No advantage was gained by cross sowing last season, but it is purposed to make a further test of this before definite results are published.

LACOMBE.

BARLEY.

Ten varieties of six-row and five of two-row barley were tested in 1915. The seed was sown at the rate of 3 bushels per acre on black loam land that had grown roots in 1914. Seed was sown April 13, and cutting of the plots was done from August 10 to August 21. Only the named sorts are here reported upon. One of the new varieties, not yet named, yielded at the rate of over 63 bushels per acre.

Six-row Barley.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					In.		In.	Lb.	Bu.	lb.	Lb.
1	Odessa	April 13	Aug. 16	125	41	10	2·0	2,400	50	..	51·6
2	Mansfield	" 13	" 16	125	43	10	2·0	2,325	48	21	54·2
3	O. A. C. 21	" 13	" 16	125	53	10	2·5	2,180	45	20	48·1
4	Stella	" 13	" 18	127	52·5	10	3·2	2,000	41	32	51·4
5	Manchurian	" 13	" 16	125	51	10	2·7	1,980	41	12	49·1
6	Success	" 13	" 10	119	40	10	2·2	1,560	32	24	50·3
7	Guymalaye	" 13	" 10	119	37	10	2·2	1,520	31	32	62·0

Two-row Barley.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					In.		In.	Lb.	Bu.	lb.	Lb.
1	Gold	April 14	Aug. 23	131	41	10	2·2	2,550	53	6	55·4
2	Swedish Chevalier	" 14	" 26	134	44·5	10	3·0	2,220	46	12	55·2
3	Invincible	" 14	" 26	134	45	10	2·7	1,524	31	36	54·8
4	Early Chevalier	" 14	" 16	124	41	10	2·2	550	11	22	53·2
5	Swan's Neck	" 14	" 17	125	42·5	10	2·2	440	9	8	54·4

Six-row Barley.—Test of Varieties.—Four-year average.

Variety.	No. of days maturing.	Yield per acre.	
		Bu.	lb.
Mansfield	124	70	25
O. A. C. 21	125	66	10
Odessa	126	65	46
Manchurian	128	64	22
Stella	126	60	..
Guymalaye	122	42	34
Success	118	26	22

Lacombe.

Two-row Barley.—Test of Varieties.—Four-year Average.

Variety.	No. of days maturing.	Yield per acre.	
		Bu.	lb.
Swedish Chevalier	132	65	37
Gold (2 yr.)	133	62	9
Invincible	130	58	17
Swan's Neck	126	49	18
Early Chevalier	121	41	7

PEAS.

Six varieties of peas were sown April 12, on black loam soil. These made fairly good growth and were harvested September 10, with the exception of the Arthur and Solo varieties which had been cut August 31.

Peas.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw.	Average length of Pod.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
					Inches.	Inches.	Lb.	Bu.	lb.	Lb.
1	Prussian Blue	April 12	Sept. 10	151	70	2½	2,560	42	40	64·0
2	Golden Vine	" 12	Sept. 8	149	80	2½	2,380	39	40	64·4
3	Chancellor	" 12	Sept. 8	149	76	2¾	2,340	39	..	64·5
4	English Grey	" 12	Sept. 8	149	66	2½	2,300	38	20	62·0
5	Arthur Selected (average of 3 plots)	" 12	Aug. 29	139	65	2½	2,197	36	37	64·6
6	Solo	" 12	" 29	139	70	2½	2,080	34	40	64·0

FLAX.

Flax, although not a common crop in this section of Alberta, was tested last year and gave very satisfactory returns. The seed was put in May 11, and harvested September 10. The land was a heavy black loam that had grown roots in 1914. Two smaller plots of Longstem and Novelty flax were tested for a fibre crop, and a sample from each sent to Ottawa to be retted.

Flax.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of Plants.	Yield of Seed per acre.	Yield of Seed per acre.		Weight per measured bushel after cleaning.
					Inches.	Lb.	Bu.	lb.	Lb.
1	Novelty	May 11	Sept. 10	122	32	1,580	28	12	51·5
2	Longstem	" 11	" 7	119	43	1,440	25	40	52·3

EXPERIMENTS AT BEAVERLODGE, ALBERTA.

By W. D. ALBRIGHT.

Following an extremely dry late summer and autumn in Grande Prairie, the winter of 1914-15 set in in November, the ground being finally closed to the plough on November 11. Winter was steady and mild, —23° being the lowest temperature recorded.

Seeding operations were begun the latter part of March, although most of the grain was sown in April. Cool weather at the outset retarded growth considerably. Frequent showers and a light snowfall at the end of April provided abundant moisture early in the season, but dry weather in June damaged the crops considerably, especially those on stubble. The rainfall in July was heavy, and frequent showers and warm growing weather continued until harvest. Heavy frosts occurred in September, but the grain did not suffer much, as it was practically all in the stook. There was very little wind throughout the summer. On the whole the season of 1915 will rank as a phenomenally good one, and very favourable for grain crops.

The plots of grain, one-sixtieth acre each, were sown at the foot of a hill sloping to the west. The land was not in good condition, owing to the fact that it had been sown with grain for the five years previous, and was consequently very foul with weeds. To destroy these the ground was harrowed or raked by hand.

The varieties tested were grouped in four ranges as follows:—

1st range, oats: Abundance, Ligowo, Eighty Day, Banner and Daubeney.

2nd range, wheat: Marquis, Pioneer, Prelude and Huron.

3rd range, barley: Manchurian, Success and French Chevalier.

4th range, peas: Arthur (Ottawa seed) and a double sized plot of Arthur (home-grown seed from last year's trial plot).

The results were as follows:

Name of Variety.	Date of Sowing.	Date of Ripening.	Yield per acre.		Remarks.
			Bu.	lb.	
Oats:—					
Abundance	April 9	Aug. 24		...	Some sheaves consumed by stock.
Ligowo	" 9	" 24	88	8	Poor soil.
Eighty Day	" 9	" 5	88	28	Results confused in threshing. Average of two plots given. Daubeney seemed the better grain.
Daubeney	" 9	" 8			
Banner	" 9	" 24	111	6	Good soil. Rank straw. 16 sheaves. Some thrips.
Wheat:—					
Marquis	April 6	Aug. 26	43		Poor soil
Pioneer	" 6	" 20	37		"
Prelude	" 6	" 16	26		
Huron	" 6	" 30	68		Soil extra good.
Barley:—					
Manchurian	April 23	Aug. 8	42	24	
Success	" 23	" 5	..	..	Some sheaves consumed by stock. Promised very light yield.
French Chevalier	" 23	" 8	38	36	
Peas:—					
Arthur (Ottawa seed)	April 23	Aug. 31	22	30	
Arthur (home grown seed, double size plot)	" 23	" 31	35		Large plot on better soil than small one.

Special care had been taken to select a uniform piece of land, but subsequent observation after seeding revealed a damper, colder condition of the land and a tardier germination in the case of the plots of Abundance and Ligowo oats, Marquis and Pioneer wheats, Manchurian and Success barley, and the smaller plot of peas sown with Ottawa seed. This explanation will account for the relatively high yield of Huron wheat, 68 bushels per acre; Banner oats, 111 bushels (despite some loss by thrips); and the much smaller though still creditable production of the Marquis wheat and Ligowo oats. The much greater yield per acre of the second plot of peas indicates that the soil variation must have been marked.

REMARKS.

The yields of all the staple varieties indicate a high producing value for Grande Prairie soils.

All the varieties ripened hard, well in advance of autumn frosts.

The very early sown varieties did not give as good results as those sown later, as the more extensive cultivation which these received rendered a greater supply of moisture and nitrate available at the most essential period.

WHEAT.

The high quality and heavy yield of Marquis once more establish its claim to favour.

It is noteworthy that a commercial crop of Marquis adjacent to the plot, but on soil corresponding more nearly to that on which the Huron plot grew, was much longer and stouter in straw and larger in head than the Marquis on the test plot. A 10-acre field of it on a neighbour's farm turned off 45½ bushels per acre, after a month's weathering in mice-infested stooks.

Pioneer is probably not a serious rival of Marquis for this district.

Prelude is more adapted to conditions farther north than Grande Prairie.

Making full allowance for superior natural conditions, the Huron plot distinguished itself, actually producing more pounds of grain per acre than any of the five varieties of oats.

OATS.

All the oats did well, even the early ones giving heavy yields. Through a mishap in threshing, the crops of Daubeney and Eighty Day became mixed, so that only an average of the two can be given. Both did very well indeed, considering their early date of maturity. Daubeney gave greater yield and length of straw, though the Eighty Day ripened three days sooner.

BARLEY.

The yield of the barleys was relatively inferior to that of the other grains. This was likewise true of commercial crops grown in the district, and may have been caused by rust, which was rather bad, particularly on Success. This latter variety, while ripening first, was not otherwise satisfactory, growing thinly on the ground and shattering badly under the most careful handling. Owing to an accident the exact yield of the Success plot is not available, but it was small.

PEAS.

The larger plot of Arthur peas (seeded from the produce of last year's plot) yielded creditably after a month of weathering in bunches. Growth of vine was excellent, maturity fairly even, and sample superb.

BEAVERLODGE.

EXPERIMENTAL STATION, FORT VERMILION, ALTA.

ROBERT JONES, MANAGER.

EXPERIMENTS WITH SPRING WHEAT.

Nine varieties of spring wheat were sown in uniform test plots of one-sixtieth of an acre each.

All wheat sown on land on which a hoed crop had been grown the previous year, seeded at rate of 1¾ bushels per acre, sown on April 15 to April 17. These dates are the earliest on which wheat has been sown in this locality. The season throughout was quite dry, with only a moderate amount of rain-fall during the growing period. After the 15th of June, when the frost occurred, the weather was very warm and continued so throughout the balance of June and all of July and August. The first wheat was cut on August 4 and we continued cutting until the 17th when all wheat was cut at the station.

The yields of straw per acre from the plots were as follows:—

	Tons.	Lb.
Red Fife	2	1,670
Marquis	2	830
Prelude	2	1,320
Bishop	2	1,220
Stanley	2	1,280
Preston	3	1,020
Ladoga	3	72
Early Riga	2	1,800

Spring Wheat.—Test of Varieties.

Name of Variety	Date of Sowing.	Date of Ripening.	Number of days maturing.	Average length of straw, including head.	Strength of straw on a scale of 10 points.	Average length of head.	Yield of grain per acre.	Yield of grain per acre.		Weight per measured bushel after cleaning
				Inch.		Inches.	Lb.	Bu.	lb.	Lb.
Red Fife	April 15	Aug. 18	125	43	10	3·5	3,420	57	6	64·0
Marquis	" 15	" 16	123	39	10	3·7	2,550	42	30	64·8
Prelude	" 15	" 4	111	36	8	2·5	946	15	46	64·0
Bishop	" 15	" 5	112	38	10	3·0	2,531	42	11	64·1
Stanley	" 16	" 5	111	32	9	2·7	1,440	24	..	62·1
Preston	" 16	" 13	119	42	6	3·0	3,720	62	..	64·0
Ladoga	" 16	" 11	117	38	9	3·5	3,300	55	..	63·5
Early Riga	" 17	" 5	110	30	10	2·5	2,040	34	..	63·4
Kubanka	" 17	" 14	118	38	[illegible]	2·2	2,580	43	..	65·6

EXPERIMENTS WITH OATS.

Five varieties of oats were sown in uniform plots of one-sixtieth of an acre each, on land that was in hay crop the previous year. The hay on this land was cut in the early part of July, 1914, and as soon as cured was hauled off and the land ploughed. Manure was then applied at the rate of about 15 tons per acre, and disced in and the harrow run over a number of times during the autumn to conserve the moisture.

In the spring of 1915 this land was again disced lightly and then harrowed over with a smoothing harrow.

The seeding was done April 22, at the rate of 2½ bushels per acre. The yields are somewhat low.

The yields of straw from the plots were as follows:—

	Tons.	Lb.
Banner	2	1,400
Tartar King	2	1,160
Improved Ligowo	2	860
Black Mesdag	2	1,640
Excelsior Black	3	1,620

Oats.—Test of Varieties.

Name of Variety.	Date of Sowing.	Date of Ripening.	No. of Days Maturing.	Average Length of straw including head.	Strength of straw on a scale of 10 points	Average Length of Head.	Yield of Grain per Acre.	Yield of Grain per Acre.		Weight per measured bushel after cleaning
				Inches.		Inches.	Lb.	Bu.	Lb.	Lb.
Banner	April 22	Aug. 7	107	42	10	8·5	3,267	96	4	37·0
Tartar King	" 22	" 10	110	43	10	9·0	2,299	67	21	38·1
Improved Ligowo	" 22	" 4	104	42	10	8·0	2,178	64	2	35·1
Black Mesdag	" 22	" 3	103	39	7	8·5	2,359	69	13	32·8
Excelsior Black	" 22	" 16	116	42	9	7·7	3,085	90	25	37·0

EXPERIMENTS WITH BARLEY.

The barleys had the same treatment as the oats, and were sown alongside the oats on the same kind of land.

The barleys were sown on April 3 and 4, except Hulless White, which was sown on April 20. The barley was sown at the rate of 2 bushels per acre. All the plots were one-sixtieth of an acre.

The yields of straw obtained from the barleys are as follows:—

	Tons.	Lb.
Mensury	3	360
Claude	3	660
Success	3	120
Champion	3	120
Sidney	3	—
Canadian Thrope	2	1,460
Hulless White	3	780

BARLEY.—Test of Varieties.

Name of Variety.	Date of Sowing.	Date of Ripening.	No. of Days Maturing.	Average Length of straw including head.	Strenth of straw on a scale of 10 points	Average Length of Head	Yield of Grain per Acre.	Yield of Grain per Acre.		Weight per measured bushel after Cleaning.
				Inches.		Inches.	Lb.	Bu.	Lb.	Lb.
Mensury (6-row).........	May 4	Aug. 4	92	40	7	3·5	3,180	66	12	48·3
Claude (6-row)...........	" 4	" 4	92	41	8	3·7	3,448	71	40	45·1
Success (6-row).........	May 3	July 29	88	35	6	3·0	2,904	60	24	42·3
Champion (6-row)....	" 3	" 30	89	42	5	3·5	3,267	67	11	39·2
Sidney (2-row)...........	" 3	Aug. 3	92	36	10	3·0	2,480	51	32	50·0
Canadian Thorpe (2-row)	" 3	" 3	92	35	10	3·0	2,238	46	30	50·5
Hulless White (6-row)....	April 29	Aug. 14	108	36	8	3·0	2,493	51	44	64·0

Success, Champion and Hulless White belong to the class of "hooded" barleys, having no awns.

EXPERIMENTS WITH FIELD PEAS.

Two varieties of field peas were sown in uniform test plots of one-sixtieth of an acre on land that was summer-fallowed the previous year. The plots were sown on April 23, at the rate of 2 bushels per acre. The season was favourable for a really fair test of the varieties. The following results were obtained. The yields of straw obtained were:

	Tons.	Lb.
Arthur	2	1,810
Prussian Blue..	2	740

PEAS.—Test of Varieties.

Name of Variety.	Size of Pea.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Straw.	Average Length of Pod.	Yield of Grain per Acre.	Yield of Grain per Acre.		Weight per measured bushel after Cleaning.
					Inches.	Inches.	Lb.	Bu.	Lb.	Lb.
Arthur....................	Large...	April 23	Aug. 19	118	46	2·5	2,580	43	..	65·4
Prussian Blue...........	Medium	" 23	" 21	120	54	2·0	2,340	39	..	66·1

BUCKWHEAT.

Two varieties of buckwheat, Silver Hull and Japanese, were sown in plots of one-sixtieth of an acre on May 20, but were completely killed out by the frost in June.

FORT VERMILION.

EXPERIMENTS AT GROUARD, ALBERTA.

REV. BRO. LAURENT, EXPERIMENTALIST.

Spring opened early, about fifteen days in advance of former years.

Seeding was begun the first week in April. The wheat was sown on summer-fallow, and the oats and barley on stubble. The small samples were sown on new breaking. Hot, dry weather which occurred about July 15, when the grain was heading out, checked the growth of straw to a marked degree, but the development of the grain was not seriously affected.

All the grain except Victory oats was ripe and cut before August 21.

Following are the results obtained from the different varieties of grain which were tested this season:—

WHEAT.

Marquis, sown on April 15, ripened on August 14, and gave a yield of 26 bushels 15 pounds per acre.

Preston, sown on April 16, ripened on August 17.

Early Red Fife, sown on April 16, ripened on August 12.

Pioneer, sown on April 14, ripened on August 16, and gave a yield of 40 pounds from 4 pounds of seed.

OATS.

Ligowo, sown on April 17, ripened on August 2.

Abundance, sown on April 19, ripened on August 5.

Victory, sown on April 14, ripened on August 21, and gave a yield of 70 pounds from 3 pounds of seed.

BARLEY.

Odessa, sown on April 28, ripened on August 3.

Manchurian, sown on April 28, ripened on August 5.

Early Chevalier, sown on April 14, ripened on August 5, and gave a yield of 60 pounds from 4 pounds of seed.

The yields of the plots of Pioneer wheat, Victory oats, and Early Chevalier barley were considerably reduced owing to destruction by birds.

EXPERIMENTS AT FORT RESOLUTION, MACKENZIE DISTRICT.

Spring opened very early. Seeding operations were begun the second week in May and were completed by the 26th of the month. The first part of June was very wet and growth was slow. Extremely hot weather prevailed from July 10 to July 22, but this was offset by the abundant rainfall later in the month.

Tests were made of spring wheat, oats, barley, and peas. Oats succeeded better than the other cereals. The experiments with wheat and barley were not very satisfactory, as it was not possible to sow the seed until rather late, and the grain failed to ripen before the autumn frosts. These grains will, however, be tested again next season.

The following varieties of oats were tested: Eighty Day, Ligowo, Pioneer and French Black. Among these, Eighty Day proved the earliest.

Eighty Day, sown May 24, ripened on August 3. The yield from 3 pounds of seed was 55 pounds.

Ligowo, sown on May 24, ripened on September 1. The yield from 4 pounds of seed was 72 pounds.

Pioneer and French Black, sown on May 24, ripened on the same date as Ligowo. The yield of Pioneer was 151 pounds from 7 pounds of seed, and in the case of French Black, 122 pounds from 5 pounds.

Arthur was the only variety of peas tested. It was sown on May 19 and ripened on September 20.

GIROUARD.

EXPERIMENTS AT FORT PROVIDENCE, MACKENZIE DISTRICT.

The season of 1915 was on the whole favourable for cereals. The plots, however, suffered considerably from the prolonged drought which occurred in the summer, and from the heavy frosts about the middle of June.

The following varieties of grain were tested: Prelude and Marquis wheats; Manchurian and Success barleys: Eighty Day and Ligowo oats; and Arthur peas. These were all sown on the 23rd of April and ripened between the 25th of July and the 8th of August.

EXPERIMENTS AT FORT SMITH.

The season of 1915 was very unfavourable, owing to the severe drought which prevailed during the spring and the early part of the summer. Heavy frost occurred in May and June, and even July was not free from it.

Seeding was begun early in May and was completed by the 20th of the month.

Tests were made of wheat, oats, and barley. These plots received a severe set-back from the heavy frosts in June.

On the whole very satisfactory results were obtained, considering the nature of the season. The experiments will be repeated next year.

EXPERIMENTAL STATION, INVERMERE, B.C.

G. E. PARHAM, SUPERINTENDENT.

The season of 1915 was exceptionally favourable for cereals. The spring opened early, there was an absence of late frost, and, most important of all, an abundance of rain during the vitally important growing months of June and July. Harvesting was conducted under favourable conditions, and the grain threshed was in every case an excellent sample.

The experiments in this division, which were inaugurated this year, are arranged in a system of rotations, with the idea of supplying the much-needed humus to the soil. This is to be done by alternating crops of cereals and legumes. The legumes used, viz., clover and peas, are ploughed under during the season alternating with the cereal crop. Clover is sown with the cereal as a nurse crop, one cutting is taken off during the next season, and at the time the second cut is ready it is ploughed under. The peas, when sown as the alternating crop, are ploughed under when the pods are commencing to form. The light yield, as will be seen from the accompanying tables, is accounted for by the fact that the work done this year was undertaken without preparation of soil, such as the rotations now inaugurated will provide.

SPRING WHEAT.

Three varieties, as below, were tested on duplicate plots; the following table shows the particulars noted:—

Plot.	Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Yield per acre.	Weight per measured bushel.
					Lb.	Lb.
A.	Huron	April 13	Aug. 12	122	1,320	64
	Marquis	" 13	" 12	122	1,440	67·5
	Pioneer	" 13	" 9	119	1,320	67·0
B.	Huron	April 13	Aug. 12	122	1,360	64·0
	Marquis	" 13	" 12	122	1,400	67·5
	Pioneer	" 13	" 9	119	1,400	67·0

The above plots received one irrigation on June 12.

BARLEY.

Experiments were conducted with barley in duplicate plots with four varieties, two of six-row and two of two-row. The following results were obtained:—

Plot.	Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Yield per acre.	Weight per measured bushel.
					Lb.	Lb.
A.	(Six-row)					
	Manchurian	April 16	Aug. 4	111	1,280	53·0
	Success	" 16	July 27	103	800	49·5
	(Two-row)					
	Early Chevalier	" 16	Aug. 4	111	880	54·0
	Gold	" 16	" 4	111	1,280	54·5
B.	(Six-row)					
	Manchurian	April 16	Aug. 4	111	1,120	53·0
	Success	" 16	July 27	103	820	49·5
	(Two-row)					
	Early Chevalier	" 16	Aug. 4	111	1,040	54·0
	Gold	" 16	" 4	111	1,040	54·5

OATS.

Three varieties were tested in duplicate plots, and gave the following results:—

Plot.	Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Yield per acre.	Weight per measured bushel.
					Lb.	Lb.
A.	Banner	April 13	Aug. 9	119	1,160	43·0
	Daubeney	" 13	" 9	119	1,090	40·0
	Victory	" 13	" 9	119	1,170	42·0
B.	Banner	April 13	Aug. 9	119	1,440	43·0
	Daubeney	" 13	" 9	119	1,290	40·0
	Victory	" 13	" 9	119	1,220	42·0

PEAS.

Five varieties, viz.: Arthur, Chancellor, Golden Vine, Prussian Blue and Solo, were sown on April 13 and were cut on August 14. Unfortunately, while they were ripening out in windrows a sudden windstorm so entangled the different varieties that it was impossible to determine the relative yields.

EXPERIMENTAL FARM, AGASSIZ, B.C.

P. H. MOORE, B.S.A., SUPERINTENDENT.

WEATHER.

The spring of 1915 was one of the earliest on record. All the variety test plots were sown by April 9. The first sowing was done on March 27. The months of April and May were comparatively wet, having over 5 inches of rain each month. June and July had a small amount of precipitation, which, with the good start the small grains received in April and May, tended towards a good development. Excellent harvest weather in August also favoured the small grains and one of the best crops in many years was threshed. The colour and quality of the grain were equal to that of 1914, which was above the average.

The following is an official report on weather conditions between seeding and harvest:—

1915.	April.	May.	June.	July.	August.	Totals.
Inches precipitation	5·37	5·2	2·36	1·62	0·07	14·62
Hours sunshine	139·6	131·0	138·1	195·0	172·0	775·8
Highest temperature	76°	81°	91°	95°	98°	88·2 (aver-
Lowest temperature	31°	35°	42°	40°	45°	38·6 age.)
Mean monthly temperature	50·12	54·27	59·44	62·9	66·22	58·59 “

LAND AND TREATMENT.

The land upon which the cereal crops were grown was sandy loam in nature. It was a portion of the land which grew mangels in 1914 and received the same treatment as our regular four-year rotation. This four-year rotation consists of: fall ploughing of pasture or hay land, ploughing in manure in winter and early spring, spring ploughing and seeding to mangels or corn. Following the hoed crop it is fall ploughed and in the spring it is prepared and seeded to grain with a grass mixture. The two years following this it is used for the production of hay and pasture.

All grains subject to smut were treated with formaldehyde, before sowing, in the following manner: One pound of commercial formaldehyde in 40 gallons of water was put in covered barrels and the grain was placed in sacks, immersed, and soaked for five minutes. It was afterwards spread out on the floor to dry, and sacked up ready for seeding.

SPRING WHEAT.

Six varieties of spring wheat were sown. The yield per acre for all varieties was low. Early Red Fife gave the highest yield with Marquis second, but, calculating on an eight-year average the Marquis gave the highest yield with Early Red Fife second. The "wheat midge" which has always been a factor in our low yield was not so severe in its attack this year as usual, a condition which is possibly due to the early planting.

Spring Wheat.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of Days Maturing.	Average Length of straw including head.	Strength of straw on a scale of 10 points	Average Length of Head.	Yield of Grain per Acre.	Yield of Grain per Acre.		Annual average yield per acre for 3 years.	
					Inches.		Inches.	Lb.	Bu.	Lb.	Lb.	
1	Marquis	April 9	Aug. 4	117	54	10	3·0	1,500	25	..	22	20
2	Early Red Fife	" 9	" 4	117	52	10	3·5	1,515	25	15	21	25
3	Red Fife	" 9	" 6	119	52	10	3·5	1,065	17	45	17	45
4	Huron	" 9	" 4	117	53	10	3·5	990	16	30	15	50
	Prelude	" 9	July 29	111	40	9	2·0	1,110	18	30	..	..
	Pioneer	" 9	Aug. 3	116	50	10	3·0	915	15	15	..	..

OATS.

Fifteen varieties of oats were tested. The yields of all varieties were good and well in advance of the ordinary years. The Danish Gul-Nesgaard, which matured in one hundred and sixteen days, gave us the heaviest yield. This oat has only been tested two years, and in 1914 was second only to Gold Rain. Comparing yields from a five-year average, the Lincoln, which matured in one hundred and seventeen days this year, gave us the highest yield, followed closely by Banner, Danish Island, and Gold Rain. Of the earliest varieties, Eighty Day, which matured in one hundred and two days, gave the highest yield.

Oats.—Test of Varieties.

Number.	Name of Variety.	Date of Sowing.	Date of Ripening.	No. of days Maturing.	Average Length of straw, including head.	Strength of straw on a scale of 10 points.	Average Length of Head.	Yield of Grain per Acre.	Yield of Grain per Acre.		Annual average yield per acre over period of 5 years.
					Inches.		Inches.	Lb.	Bu.	Lb.	Lb.
1	Lincoln	April 9	Aug. 4	117	54	10	10	3,390	99	24	2,302
2	Banner	" 9	" 3	116	55	10	11	3,150	92	20	*2,210
3	Danish Island	" 9	July 31	113	53	10	10	2,910	85	20	2,174
4	Gold Rain	" 9	" 30	112	57	10	11	3,000	88	8	2,140
5	Irish Victor	" 9	" 31	113	52	10	9	2,895	85	5	2,131
6	Twentieth Century	" 9	" 30	112	50	10	11	2,940	86	16	2,100
7	Eighty Day	" 9	" 25	102	44	9	9	2,940	86	16	*1,945
8	Daubeney	" 9	" 20	102	48	10	9	2,235	65	25	*1,835
9	Swedish Select	" 9	" 20	111	44	10	10	2,430	73	8	1,766
	Danish Gul Nesgaard	" 9	Aug. 3	116	56	10	10	3,380	102	12	
	O. A. C. No. 72	" 9	" 3	116	54	10	10	3,360	98	28	
	Victory	" 9	July 30	112	57	10	11	3,000	88	8	
	White Wave	" 9	Aug. 3	116	58	10	10	2,550	75	..	
	Ligowo, Swedish	" 9	July 29	111	58	10	10	2,550	75	..	

*Average over a period of 4 years.
†Average over a period of 3 years.

BARLEY.

Fourteen varieties of barley were tested. The general yield of all varieties was above average. Beaver, a two-row type which matured in one hundred and two days, gave the highest yield, and is also highest in the five-year average. For an average of five years this variety is closely followed by Danish Chevalier and Swedish Chevalier, which ripened in one hundred and six and one hundred and eight days, respectively. All varieties were somewhat weak in the straw this season. Success, a six-row beardless type, gave the lowest yield. White Hulless, a six-row type, was also very low in yield.

All the barley plots were sown on April 9.

BARLEY.—Test of Varieties.

Number.	Name of Variety.	Type.	Date of Ripening.		No. of Days Maturing.	Average Length of straw including head.	Strength of straw on a scale of 10 points.	Average Length of Head.	Yield of Grain per Acre.	Yield of Grain per Acre.		Annual average yield per acre over a period of 5 yrs.
						Inches.		Inches.	Lb.	Bu.	Lb.	Lb.
1	Beaver........	2-row...	July	19	105	50	5	3·0	3,195	86	27	2,323
2	Danish Chevalier......	2-row...	"	24	106	45	7	4·0	3,375	70	15	2,186
3	Swedish Chevalier......	" ..	"	26	108	46	8	3·7	2,640	55	..	2,059
4	Trooper..............	6-row...	"	23	105	[illegible]	7	2·5	3,300	68	36	2,016
5	Oderbruch.............	" ..	"	21	103	42	9	2·5	2,895	60	15	1,968
6	Invincible............	2-row...	"	27	109	44	3	3·0	2,700	56	12	1,944
7	Canadian Thorpe....	" ..	"	24	106	46	10	2·5	2,400	50	..	1,940
8	O. A. C. No. 21........	6-row...	"	20	102	44	10	2·5	1,590	33	6	1,824
9	Manchurian............	" ..	"	21	103	40	9	3·0	2,250	46	42	1,748
10	Success (beardless)	6-row...	"	16	98	39	8	2·5	1,590	33	6	*1,547
	Gold..................	2-row...	"	23	105	36	8	2·2	2,760	57	24	
	Danish Tystoffe Prentice.............. ..	" ..	"	27	109	40	7	3·5	2,430	50	30	
	Odessa......	6-row...	"	19	101	43	9	2·5	1,590	33	6	
	White Hulless.........	" ..	"	19	101	38	8	2·2	1,650	34	18	

*Average yield over a period of 4 years.

FIELD PEAS.

Nine varieties of peas were tested, but they did not have as good an opportunity as the other small grains. They were on a piece of land which proved to be badly infested with quack grass, and the yields were consequently low. The three leading varieties were Solo, Golden Vine, and English Grey, all of which matured in about 130 days. The Solo, which has been tested for two years only, has given excellent results in the field, and as well as yielding a good crop of seed, gave as good a return as green fodder when mixed with oats and appears to be better adapted for this use than any of the other varieties.

PEAS.—Test of Varieties.

Number.	Name of Variety.	Size of Pea.	Date of Sowing.	Date of Ripening.	Number of days Maturing.	Average Length of Straw.	Average Length of Pod.	Yield of Grain per Acre.	Yield of Grain per Acre.	Annual average yield per acre over a period of 4 yrs.
						Inches.	Inches.	Lb.	Bu. Lb.	Lb.
1	Solo	Medium	Mar. 27	Aug. 4	131	48	3·5	1,760	29 20	†2,472
2	Golden Vine	Small	" 27	" 3	130	47	2·5	1,910	31 50	1,887
3	English Grey	Medium	" 27	" 4	131	48	3·5	1,640	27 20	1,775
4	Prussian Blue	Medium	" 27	" 4	131	49	3·0	1,590	26 30	1,742
5	Picton	Medium	" 27	" 4	131	48	2·5	1,505	25 5	1,651
6	Chancellor	Small	" 27	" 2	129	47	2·0	1,190	19 50	1,640
7	Prince	Large	" 27	" 6	133	46	3·5	1,305	21 45	1,631
8	Arthur Selected	Medium	" 27	" 2	129	45	3·0	1,540	25 40	1,630

†Average over a period of 2 years.

OATS FOR HAY.

Four varieties of oats were grown for hay and this year gave much larger yields than in previous years in which the trial has been made. For the two previous years Swedish Select has given the biggest yield, but this year it takes second place to Banner. The following is the tabulated result of this test:—

Variety.	Amount seed sown per acre.	Yield per acre.
	Lb.	Tons. Lb.
Banner	85	4 1,300
Swedish Select	85	3 [illegible]
Daubeney	85	2 1,400
Ligowo	85	2 700

The quality of the oat hay is much improved by adding peas to the mixture and by sowing a larger quantity per acre. The extra cost of the seed per acre is well paid by the extra yield and quality of the crop grown. The lowest yielding oat in the hay trials was sown at the rate of 3 bushels per acre and 1 bushel of Solo peas per acre was added. From this mixture, 4 tons 1,600 pounds of excellent hay were harvested.

AGASSIZ.

EXPERIMENTAL STATION FOR VANCOUVER ISLAND, SIDNEY, B.C.

LIONEL STEVENSON, B.S.A., M.S., SUPERINTENDENT.

CHARACTER OF THE SEASON.

The remarkably open winter, with its light rainfall and relatively high mean temperatures, permitted the growth of all autumn-sown cereals adapted for the conditions. As a result, Arlington Awnless barley was 30 inches high and headed out on March 26. Volunteer plants of Marquis wheat, Victory, and Banner oats, Tapp and Mensury barley were from 12 to 20 inches high, April 1.

The rainfall, temperatures and sunshine for the growing season were as follows:—

Month.	Rainfall.	Temperatures.			Sunshine.	
		Max.	Min.	Mean.		
	Inches.	°	°	°	Hours.	Minutes.
October	5·63	66·0	39·0	51·90	94	48
November	8·20	56·0	32·0	46·30	46	3
December	1·21	41·6	34·0	37·80	72	56
January	2·77	49·0	27·5	38·50	70	4
February	1·66	51·0	31·0	41·60	65	9
March	1·65	64·0	35·0	47·0	142	7
April	1·65	70·0	35·0	51·0	223	4
May	2·06	75·5	40·0	55·0	181	2
June	0·74	86·0	46·0	59·95	304	0

The soil of the cereal test plot area is a light loam on a clay-gravel hard-pan. The land has been but recently cleared and had been cultivated only one year. Four varieties each of autumn-sown wheat and rye were under test; two varieties of winter barley, and one variety of winter oats were also tested. The wheat, oat, and barley plots suffered much from lack of drainage, and consequently did not produce heavily.

Four varieties of spring-sown barley, three varieties of oats, two varieties of peas, and one variety of flax and three varieties of spring wheat were also tested. These all gave fairly uniform results considering that the soil had been but recently brought under cultivation.

The results of all cereal test-plot work are given in the following tables:—

TEST PLOTS of Autumn-sown Cereals.—Season 1914-15.

Variety.	Size of plot.	Quantity of seed sown per acre.	Date of Sowing.	Date of Germination.	Date of Heading.	Date of Cutting.	Length of Straw.		Yield of straw per acre.	Yield of grain per acre.
	Acre.	Bush.					Ft.	In.	Lb.	Lb.
Barley Arlington Awnless	1/12	1	Sept. 28	Oct. 7	Mar. 23	June 2	4	10	3,216	1,440
Oat New Zealand	1/63	½	" 28	" 9	May 22	July 17	3	7	2,646	1,008
Barley Tapps Winter	1/17	¾	Oct. 9	" 22	" 10	" 9	3	6	2,160	934
Wheat Tasmanian Red	¼	1¾	" 3	" 12	" 8	" 12	4	3	3,188	920
Wheat Dawsons Golden Chaff	¼	1¾	Sept. 28	" 7	" 8	" 12	4	8	2,772	1,047
Wheat Turkey Red	¼	1¾	" 28	" 7	" 12	" 12	4	3	3,132	576
Wheat Egyptian Amber	¼	1¾	Oct. 3	" 12	" 14	" 12	4	[illegible]	3,204	856
Wheat Buda Pesth	¼	1¾	Sept. 28	" 7	" 8	" 22	4		2,392	781
Rye Thousandfold	¼	1½	Oct. 5	" 14	April 25	" 13	6		4,080	1,237
Rye Mammoth White	¼	1½	" 5	" 14	" 22	" 14	6	6	3,048	962
Rye Dominion	¼	1½	" 5	" 15	" 25	" 14	5	9	2,944	1,008

TEST PLOTS of Spring-sown Cereals.

Variety.	Size of Plot.	Quantity of seed Sown per acre.	Date of Sowing.	Date of Germination.	Date of Heading.	Date of Cutting.	Length of Straw.		Yield of straw per acre.	Yield of Grain per acre.
	Acre.	Bush.					Ft.	In.	Lb.	Lb.
Wheat Huron	¼	2	April 14	April 20	June 20	Aug. 10	3	10	880	1,452
" Marquis	¼	2	" 14	" 20	" 12	" 10	4	..	1,260	1,641
" Red Fife	¼	2	" 14	" 20	" 18	" 10	4	3	1,476	2,037
Barley Manchurian	¼	2	" 14	" 20	" 10	July 22	3	8	1,376	1,689
" Canadian Thorpe	¼	2	" 14	" 20	" 12	" 22	3	6	1,924	1,676
Oat Victory	¼	3	" 14	" 21	" 18	Aug. 3	4	6	2,392	1,249
" Daubeney	¼	3	" 14	" 21	" 12	July 22	3	3	2,356	1,465
" Banner	¼	3	" 14	" 22	" 23	Aug. 3	4	9	3,184	1,579
Peas Arthur	1/10	2	" 17	" 26	Flower June 23 Podded July 1	" 14	4	8	1,475	2,112
" Pigeon	1/10	1½	" 17	" 26	Flower June 21 Podded June 30	" 14	4	3	1,580	2,464
Barley Beardless	1/16	1½	" 17	" 24	" 5	July 22	3	6	1,712	2,100
" Hulless	1/15	1½	" 17	" 24	" 9	" 22	3	2	2,390	836
Flax	1/15	40 lbs.	" 17	" 23	Flowered June. 18	Aug. 10	2	8	1,350	924

The 1915 autumn-sown cereal plots withstood the winter, and on March 15, 1916, presented appearances which indicated various degrees of hardiness and suitability to the district. Listed in order according to degree of vigour and freedom from winter killing.

Rye: Thousand Fold, Dominion, Mammoth White, Petkus.

SIDNEY.

Wheat: Saanich No. 1, Egyptian Amber, Benefactor, Dawson's Golden Chaff, Buda Pesth, Tasmanian Red, Sun, Bluestem.

Three varieties of spring wheat were sown in the autumn and came through the winter in excellent condition. The plots of Huron and of Red Fife were looking better than any of the plots of established autumn varieties, demonstrating the possible usefulness of these varieties in winter forage crop mixtures.

Plots of Arthur and Maple peas were sown, but the winter proved too severe, and killed about 75 per cent of the plants.

Four plots of vetch were sown, the winter, the spring, and selections from two native varieties. The plot of spring vetch grew more vigorously during the autumn than any of the others and withstood the winter in good form, demonstrating that it can be used in this district as an autumn crop.

OATS.

Five plots of established winter varieties of oats were sown; three of these withstood the winter in perfect form. The variety Fulghum gives promise of being the most vigorous grower.

Two plots of spring oats, namely, Victory and Saanich No. 1, were sown at the same time as the established winter varieties; these winter-killed to the extent of 50 per cent.

Listed in order, according to degree of vigour and freedom from winter killing: Fulghum, Winter Turf, New Zealand, Black Alaska, Grey Winter, Saanich No. 1, Victory.

SIDNEY.

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